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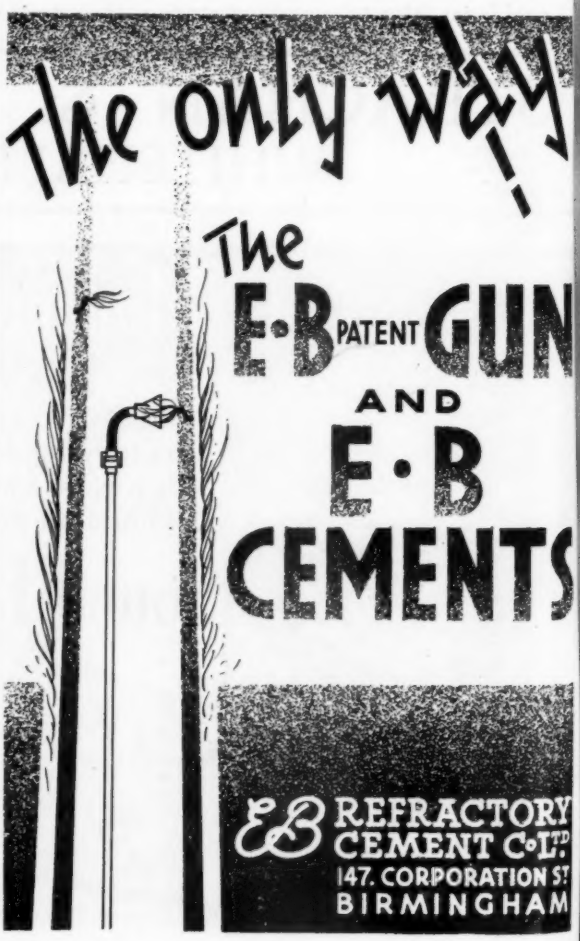

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Gas Journal

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Editorial Notes

Street Lighting

THE Gas Industry will doubtless have found of great interest the abstract which we published on Dec. 26 last of Mr. C. C. Paterson's Presidential Address to the Junior Institution of Engineers. It is certainly an important contribution to the problem of modern street lighting in relation to safety on the roads—a problem which, of course, is at present being considered by a Departmental Committee set up by the Ministry of Transport. Mr. Paterson represents the electrical interests, and he puts forward what at first sight may appear a convincing case for road brightness as *the* criterion of satisfactory illumination to meet modern conditions. "Competition in illumination," he says, "is useless, but competition in road brightness is of genuine value and importance." And he believes that our ideas are to undergo a considerable change in the next few years—in brief, that light will be directed on to the road in such a way as to utilize the tendency which nearly all materials have to reflect specularly.

Mr. Paterson's Address is an exceedingly clever, academic exposition, but in our opinion it is by no means the only aspect of satisfactory illumination. We realize the importance of road brightness, but it is only one of several phases of the question which have to be considered. We cannot accept the view that road brightness should be the one criterion of good lighting. Though a great deal of work has been done both at home and abroad on the question of road brightness, no one has yet been able to specify any way in which this can be satisfactorily measured, taking into consideration the varying aspect of the road, with change of viewpoint, and the type, material, and conditions of the road surface. A further important factor in this respect is the complete changes in reflection properties with varying degrees of wetness. Also, such a criterion does not sufficiently take into account the highly important factor that only in a proportion of cases does road surface represent the background against which objects are seen. The surfaces of footways, buildings, and so on, and other traffic so very often form the background against which objects are seen, and exclusive concentration on road surface brightness would lead to these other important surfaces being neglected from the illumination point of view.

Safety

AGAIN, false deductions can all too readily be drawn by solely considering the visibility of objects some distance ahead on flat, straight roads. In our experience of driving at night we feel more concerned about the losing of objects in dark spots where the road forms no background, as at bends, and so on, and the sudden unmasking of objects by moving traffic. We are forced to the conclusion that the criterion of horizontal illumination embodied in the British Standards Institution Specification still represents the best method of classifying streets in terms of safety of traffic and the requirements of residential and shopping areas. It is a matter of common experience that visibility in roads in higher classes of the B.S.I. Specification is quite good irrespective of the value of road brightness. It is important to bear in mind that no two thoroughfares have precisely the same requirements, and that the lighting installation must be designed having regard to the peculiarities of the particular thoroughfare—bends, cross-roads, nature of background, undulation and nature of road surface.

As on many other problems, experts differ on the question of specifying the requirements of good lighting. Satisfactory lighting for safety can only be planned by a thorough knowledge of the local conditions. This knowledge can best be obtained from a competent representative of the local authority concerned, who will co-operate with expert lighting engineers to ensure that the danger spots are well illuminated. The planning of a street lighting installation cannot follow the hard-and-fast rules of the drawing board.

A Common-Sense Outlook

THE Gas Industry has played a large part in the drafting of the B.S.I. Specification, and we feel that the Industry should back up its conclusion that this is the best measure of agreed practice at the moment. Of course, we agree that the test-point illumination can be met by installations giving poor visibility, and we would welcome any amendment of this shortcoming. Again, the Industry should stick to its belief that average illumination is at least as important as minimum illumination.

We are aware there are critics of the B.S.I. Specification on the grounds that it is too complicated, but we suggest that a simpler Specification would be more open to question. The Specification is useful as a basis for tender, and it not only recognizes the importance of good design upon agreed principles, but ensures, if applied, that lighting installations shall remain efficient.

That we have a long way to go in improving both administration and control of public lighting is obvious, and it is obvious, too, that the Gas Industry, by its research into public lighting problems, can be of great help in this direction. Above all things, we must maintain a common-sense and balanced outlook, always bearing in mind that street lighting is a highly complex business, and that concentration on a single factor will not result in good illumination or make for safer roads.

Finally, as the Gas Industry is responsible for about 70% of the street lamps in Great Britain, these comments must be of vital interest, particularly in view of the increasing intensity of competition.

The Utilization of Coke

IT can be deduced from the paper by Mr. F. B. Richards (" JOURNAL " for Oct. 31 last) that a fall of 1s. per ton in the price of coke is equivalent to a rise of 0·15d. per therm, or nearly 10% in the cost of making gas. With the realization that the returns from the sale of coke exercise a profound influence on the cost of making gas, there arises also the problem of the best methods to be adopted for obtaining the maximum return from the coke. Two recent papers have a bearing upon this important subject, and attention is here called to them not only from the inherent importance of the ideas put forward, but because it is vital that in an Industry spread over the whole area of the country and facing many problems of purely local incidence, all undertakings should observe what is being done in other places with a view to possible application.

The sale of coke for heating was discussed by Mr. L. J. Fowler, of the London and Counties Coke Association, in a paper presented at a meeting of the Institution of Heating and Ventilating Engineers. An extract from the paper is given in our issue to-day. The scientific application of coke to industrial, and especially to boiler, problems—as exemplified by Mr. Nicol's sandwich firing system and other developments—has been established practice for some time. The valuable book issued by the South Metropolitan Gas Company, which was reviewed in the " JOURNAL " for Oct. 31, shows how great has been the volume of work upon the production of a suitable domestic coke, and it is pleasing to notice that this work designed to produce a satisfactory high-temperature or medium-temperature coke for the open grate has not been confined to those who visualize commercial development in association with collieries. Mr. Fowler's paper discusses the application of these and other scientific results to the practical problems that face the heating engineer. For central heating purposes there is no possible doubt that the inception of the gravity feed boiler, especially when combined with the sale of heat by gas undertakings upon an annual fixed charge basis, has revolutionized the coke position. The imposition of the oil tax was timely, since the extra cost of heating by oil has caused heating engineers generally to explore with an open mind the possibilities of other fuels. The Coal Utilisation Council, we understand, regards this boiler as a valuable asset in its work to secure the greater use of coal products.

Cutting and Grading

THE use of the gravity feed boiler, and indeed of nearly all coke-burning appliances, necessitates the grading of coke, and this in turn leads to coke cutting. There are still some undertakings which do not cut coke, but the number is diminishing and will soon be quite inappreciable. In calling the attention of heating engineers to this boiler Mr. Fowler has performed a valuable service, but the gas undertakings generally must support the efforts of the London and Counties Coke Association and certain of the larger gas undertakings. Most central heating boilers, with the exception of the largest ones, require coke between 1 in. and 2 in. in size, but one imagines that this will depend to some extent upon the combustibility of the coke. It is interesting to record Mr. Fowler's conclusion that for the central heating and the domestic boiler, high-temperature coke is more efficient than fuels of higher volatile content, since with increasing volatile matter the additional flame gives a higher flue-gas temperature; the same would be true of a deep fuel bed forming CO which is burnt above the bed.

We have a suspicion that the last word has not been said upon this subject. The boilers upon which the observations were made had been specially designed, presumably, to burn coke. In a fuel bed the maximum combustion takes place where the air first comes into contact with the carbon, and it is here that the maximum radiation effect is observed. As everyone knows who has sat in front of a solid-fuel fire, the amount of heat received is greater when there is a flame above the fuel, because the radiant effect of the heated solid is masked by the cooler fuel superimposed upon it. Heat is best transmitted from fuel to boiler by radiation, and radiation depends upon temperature. The radiant effect of carbon in the form of soot is sufficiently near to that of a black body for it to be considered as equal to the theoretical figure; but for graphite, which presumably is similar to coke in this respect, Coblentz and Hulbert have determined figures ranging from 64 to 73% at temperatures between 2,000° and 5,000° F. The values for CO_2 and water vapour are much lower, falling between 5% and 10% of black body figures at 1,900° F. The screening effect of the solid pieces of fuel lying above the hottest zone, coupled with endothermic reactions, however, must reduce the effective temperature of radiation of the solid fuels possibly to half or less of its value at the zone of maximum temperature. If, for example, the lower layers were at 1,800° C., 65% of black body radiation would be some 600,000 K.Cals per sq. metre per hour, whereas if the upper, or effective radiating temperature directly transmitting heat to the boiler be 900° C. the radiation from the coke would be but 60,000 Cals. On the same basis the radiation from a CO_2-H_2O flame at 1,800° C. would be between 30,000 and 60,000 Cals. per sq. metre per hour, and the surface would be larger than the effective surface of the coke. There is thus some ground for believing that an intensely

high gas temperature above the fuel bed may be the best method of heat transmission in a boiler designed to take care of the higher waste gas temperature, and particularly since these conditions would also increase the upper temperature of the fuel and would increase its radiating power.

Consistency of Quality

An important point not mentioned by Mr. Fowler is that of consistency of coke quality. For forced draught conditions, uniformity between different deliveries is not, perhaps, a great matter, but for the user of the domestic coke boiler it is highly important. One difficulty, of course, is inherent in the boiler. The London and Counties Coke Association prescribe coke of $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. for these boilers, decreasing to $\frac{3}{8}$ in. to $\frac{3}{4}$ in. for the smaller boilers. Experience of the user shows that even these sizes cannot be regarded as wholly satisfactory, and that mixtures must frequently be employed. The composition of these mixtures must be determined by the householder himself—and how many are competent to do this? The difficulty arises in the varying sizes of coke boilers. Cannot some standardization of boiler sizes be achieved? It is not only that there are boilers too small to provide any reasonably efficient service, but that even of the better boilers there are too many sizes. The substitution for the present state of anarchy of two or three sizes to suit which the gas undertakings would sell coke suitably graded would be of immense assistance to the buyer.

Even this is not the end of the story. One delivery of coke is not like another. It is frequently found that even though the sizes may be alike, in one instance the fire in the domestic boiler keeps in all night and for night after night, whereas with another delivery it is difficult to keep the slow fire burning for more than four or five hours continuously. No doubt this is another phase of the problem of combustibility. It seems almost ungenerous to make this criticism when we learn that "during the last three years the gas companies which are members of the London and Counties Coke Association have spent over £1,500,000 on apparatus for improving the quality of coke," but unquestionably the Industry cannot aim at any mark below perfection. Blending will probably be the answer to this problem, and it is evident that gas undertakings are not neglecting this possibility; a large plant is at present in operation in London using semi-coke regularly for the purpose.

The open grate receives a blessing from Mr. Fowler for sound economic reasons. Central-heating apparatus, he says, is now frequently installed to give not more than 25° difference in temperature between the building itself and the outside air. During a large part of the winter it is necessary, therefore, to supplement the heating, and the open grate burning smokeless fuel, with gas ignition, is convenient and cheap. This practice of heating installation is claimed to be sound economically, for an equipment capable of giving a 35° F. rise will only operate on full load during perhaps two weeks of the winter, and for the remainder of the year full return is not obtained for the capital invested. These statements are open to some question. The field visualized for open-grate coke is too small to encourage anyone to cater for it. The capital invested in the provision of grates for the purpose is lying idle for 50 weeks in the year. If the extra heat supply is only required at special times, which will probably occur for a few hours only, or even just while having breakfast in the morning, a gas fire would surely be preferable to a coke or semi-coke fire.

The Breeze Problem

The subject of the sale of the larger sizes of coke fairly bristles with interesting points, but on reading Mr. Fowler's paper, while disagreeing on certain counts, we are left with a profound pleasure in the scientific outlook of those who have in hand the problem of coke disposal. It is still left open to inquire as to what is to be done with the breeze. Coke breeze is produced in quite large quantities during normal carbonization, but this amount is considerably increased by the practice of coke cutting. In some districts, the sandwich system has enabled the breeze to be used under power station boilers, and apart from considerations of price there is no breeze problem. In other parts of the country the breeze problem is intensified. Mr. J. Bateman, in his Address to the Scottish Junior Gas Association ("Journal" for Dec. 19) described the successful utilization of his breeze in producers. The introduction of the induced-draught waste heat boiler has reduced the demand for coke for boiler firing on gas-works, and the disposal of surplus breeze, never an easy matter all the year round, has become more difficult. The amount of breeze defined as material between 0-$\frac{3}{4}$ in. produced by normal operation at Kilmarnock is from 12% to 15% of the total coke—presumably coke is not cut at this works—whereas the normal requirements for the producer are between 25% and 28% of the coke made. The discrepancy is made up by using all coke up to 1 in. or even up to $1\frac{1}{4}$ in., and the fuel actually used contains 41% between $\frac{1}{8}$ in. and $\frac{3}{4}$ in.; 29% between $\frac{3}{4}$ in. and 1 in.; and 30% over 1 in. and under $1\frac{1}{4}$ in. All below $\frac{1}{8}$ in. is discarded. This practice means that the fraction between $\frac{3}{4}$ in. and $1\frac{1}{4}$ in. is virtually missing from the works output and that all the valuable trade of domestic hot water boilers which is being so successfully developed in other places cannot be catered for unless coke is cut for the producer.

In the North the domestic hot water boiler has not yet attained the vogue it has in the South, but it probably will do so in due course. The Kilmarnock solution to the breeze problem is very ingenious and no doubt highly commendable in relationship to local problems where coke below $1\frac{1}{4}$ in. has no sale, but it cannot be considered as the general solution to the breeze problem. What appears to be needed is a producer that will take all the breeze and as much of the unbroken coke as may be necessary to make up the amount needed. Where the whole of the coke is cut, the small extra amount above $\frac{3}{4}$ in. that may be needed is not important, and here the need seems to be for the producer to take all the fines between $\frac{1}{8}$ in. and $\frac{3}{8}$ in. or $\frac{3}{4}$ in. only. The material below $\frac{1}{8}$ in. can probably never be made suitable for a producer, and this suggests another aspect of the problem of breeze disposal. Have gas engineers considered the possibility of finely crushing the breeze and of mixing it back with the coal to be carbonized? This is an aspect of the blending problem which must not be overlooked; the throughput of the retorts is not detrimentally affected in many instances, and the quality of the coke is improved.

Bad Cooking

Whether the remarks of Mr. Frank Preston (Headmaster of Malvern College) at the recent Conference of Educational Associations, at University College, were intended to be a condemnation of the cook or the gas cooker is not quite clear. We assume it was the former. What he said, in effect, was that "the most important element in all school feeding is the cook, and unless this

nation is going to improve the supply and quality of cooks beyond the few incompetent people who toy with a gas cooker it is almost a waste of time to consider a diet suitable for anybody." There is, perhaps, some measure of gratification in the fact that Mr. Preston specifically mentions our own form of cooking in connection with the culinary activities of the country's schools; though to couple the gas cooker with a charge of incompetent handling is rather in the nature of a back-handed compliment.

It does, nevertheless, provide a line of thought for the Industry, and confirms what we have previously stressed—namely, that the culinary art is in a very neglected state in this country and has largely ceased to be transmitted from mother to daughter, the latter, upon marriage, being disposed, on account of her many out-of-home pursuits, to favour tinned foods and cooked meats as relieving her to a great extent of the need to cook and the necessity of knowing how to do it. We recently drew attention in these columns to the suggestion that electricity should be taught in girls' schools, when we considered that this schoolgirl training is a matter that the electricians must not be allowed to get away with. The inclusion of gas cooking in the curriculum of school domestic science courses admittedly provides in large measure for the coming generation. But the present generation has a long time to run yet; and if, as we believe is the case, a considerable proportion of the existing " professional " cooks know little of the proper management of the gas appliances with which they are provided, there is need for the Industry to do something about it.

Mr. Preston's remarks were intended to apply particularly to the persons employed as cooks in residential schools, and bad cooking has figured in recent discussions as one of the causes of malnutrition of school children. A special endeavour to reach the class of gas cooker user to whom we have referred will, we feel sure, be amply repaid in a direction which must reflect credit upon the cook, the Industry, and the Nation.

Birmingham Goes Ahead

If Birmingham may be regarded as any criterion of the state of affairs consequent upon trade revival in all our larger industrial centres, then the details set forth in our news columns this week will certainly prove gratifying to the Industry in general. With the improvement in trade which has been gradually manifesting itself in Birmingham during the last eighteen months or so there has been a substantial increase in the use of gas for industrial purposes. This increase is not confined to any one trade, but is spread over the heat processes carried out in practically the whole of the four thousand manufacturing establishments using gas in the City. It is estimated that of the 14,515,109,000 c.ft. used in Birmingham during the year ended September last, 3,467,595,000 c.ft. was used for industrial purposes—representing an increase of no less than 15% over the previous corresponding twelve months.

The table published on a later page of this issue shows that motor-car production is responsible for the largest gas consumption of any particular industry—with an increased consumption of 75 million c.ft. It is also interesting to observe that the production of electrical goods in the City requires 122 million c.ft. The development of the Special Section to deal with the industrial application of gas has extended over a quarter of a century, during which time every industry has been catered for as far as possible in a special way. A service has been instituted of which manufacturers can take advantage at very short notice. A large increase has been recorded in the use of gas for food production, while, turning to the other end of the industrial scale it is interesting to note that a larger amount of gas is being used in the heavier industries in Birmingham than many people realize. Recently large-scale experiments have been made for several firms, with gas-fired furnaces in their forges, replacing both solid and liquid fuel. It is clear that Birmingham manufacturers are appreciating more and more what gas can do for them.

Lye

At a recent meeting of the Stourbridge Town Council the Public Library Committee asked the Council to sanction a scheme for heating the Lye Library. As spokesman, Mr. A. S. Leather, Chairman of the Committee, explained that, in fact, the Committee had already started on the scheme.

This explanation came after what the Mayor described as an argument showing an intelligent interest in the work of the Committee. This argument was not whether the Library should be heated, but on what method to employ. In this regard Mr. Leather roundly stated that there was only one satisfactory heating agent—electricity. He was asked about the relative costs of gas, coke, and electricity, and his vague replies were in sharp contrast to his praise of electricity. He thought that where public institutions were concerned the cost of electricity would be cheaper than gas, because they would take much more electricity [no laughter !]. His real point, however, was that, apart from any considerations of cost, electricity is the ideal form of heat for libraries. Gas heating, he said, is conducive to trouble with the bindings of the books, and as for " low-pressure heating "—presumably irrespective of the fuel employed—this " formed a fungus which liked book bindings."

By no means every member at the meeting shared Mr. Leather's views. But Mr. Leather stuck to his guns, which had been moulded, he pointed out, on a recommendation of the Library Association. According to Mr. Leather, the Association had recommended electricity as the best heating medium, " low-pressure " heating second, and gas last. The arrows of his several critics were caught on the shield of this " recommendation." Unfortunately, no one at the meeting pointed out that no such recommendation has ever been made by the Library Association; and after a farcical vote for the rejection of the Library Committee's plan, their report was carried by ten votes to seven. In the meantime, of course, the work on installing electricity was proceeding.

We do not share the Mayor's opinion that the argument evinced intelligence. A more feeble case for the use of electricity has seldom been made out or a more slender excuse ever made. Truly the Gas Industry is living in competitive times.

National Gas Association of Australia.

At a recent Conference in Sydney of representatives of Australian gas undertakings, it was resolved that a national gas body should be formed. To this end an Acting Executive Committee was appointed to consider the necessary preliminaries. At the conclusion of the Centenary Gas Congress, a Meeting of the Acting Executive Committee was held, at which two sub-committees were appointed—one on Research and Appliance Testing and the other on Publicity and Propaganda. The Terms of References for these sub-committees were laid down.

PERSONAL

The position of Engineer to the Hornsey Gas Company, rendered vacant by the appointment of Mr. Kenneth Gandon to the post of Engineer and General Manager of the North Middlesex Gas Company, as recently announced in these columns, has been filled by his brother, Mr. CECIL GANDON as from the beginning of the year. Mr. Cecil Gandon received his early training at the Technical College at Aachen, Germany, following which he was for five years pupil and later Assistant Engineer with the Imperial Continental Gas Association in Germany at their Frankfurt Station. He was subsequently appointed Assistant and later Engineer and Manager to the Ottoman Gas Company, Smyrna, with whom he remained for fourteen years. After five years as Assistant General Manager to the Ottoman Railway, he returned to this country to take up his appointment at Hornsey. Mr. C. Gandon is a member of the Institution of Gas Engineers. His grandfather, before retiring, was Engineer and Manager of the Crystal Palace District Gas Company, now the South Suburban Gas Company, while his father was formerly Engineer and Manager of the Ottoman Gas Company.

* * *

In announcing in last week's "JOURNAL" that Prof. C. V. BOYS had been created a Knight, we stated in error that he relinquished the office of Gas Referee on Dec. 31 last. Sir Charles V. Boys remains a Gas Referee—an office which is not to be dissolved for some time.

* * *

Their many friends in the Industry will be pleased to know that Captain and Mrs. W. J. LIBERTY, who were involved in a motor-car accident at Eastbourne at Christmas, are progressing favourably, and both hope to be about again shortly.

* * *

Following his retirement from the post of Chief Mechanical Superintendent to the South Metropolitan Gas Company, Mr. R. C. MACDONALD and his wife set off at the beginning of August last for a pleasure trip round the world. Their friends will be interested to learn that they travelled the last stage of their interesting tour by air from Paris, and landed at Croydon Aerodrome at noon on Saturday last.

* * *

Alderman J. W. GREENWOOD, J.P., Chairman of the Stalybridge Gas Committee, desires to express his appreciation of the kind wishes of his many friends in the Industry during his recent illness, from which he has now recovered sufficiently to return home from hospital, though he is not yet strong enough to undertake his usual public duties.

* * *

We learn that Mr. CHARLES CLARE has retired from the Board of Radiation Limited, and Mr. J. IVAN YATES has been elected a Director in his place.

* * *

Mr. JOSEPH TAYLOR, Secretary of Ashton Gas Company, where, with 48 years' service to his credit, he is the oldest employee, last week celebrated his golden wedding. The Mayor and Mayoress of Ashton (Councillor and Mrs. J. Townsley) were among the hundred guests at the celebration party. The Mayor is Engineer and General Manager of the Company.

* * *

At a special meeting of the Manchester City Justices' Gas Meter Testing Committee held on Jan. 7, Mr. H. N. BARROW and Mr. HAROLD KING were appointed Chairman and Deputy-Chairman respectively for the fifteenth successive year.

* * *

Mr. M. E. RAMPLIN, Distribution Superintendent to the Morecambe and Heysham Gas Department for the past three years, has been appointed Assistant to the Chief District Superintendent at Stoke-on-Trent. Mr. Ramplin received his early training with the Felixstowe Gas Company, which is now amalgamated with the Ipswich Gas Company. He gained further experience with the Swansea and Newport (Mon.) Gas Companies.

* * *

From the *Quarterly Bulletin* of the Institution of Chemical Engineers we learn that Mr. STANLEY JONES, A.M.Inst.Gas E., of the Blackpool Gas Department, has been elected an Associate Member of the Institution. Among those who were elected Graduates are the following: Mr. SIDNEY HENRY BURGESS, Mr. FRANCIS ERNEST CRADDOCK, and Mr. ROY FRANCIS HAYMAN, B.Sc., A.I.C., of the Gas Light and Coke Company, and Mr. PERCY ROBERTS, of West's Gas Improvement Company, Ltd., Manchester.

* * *

The staff of Accrington District Gas Board recently presented a radio set to Mr. WALTER WEBSTER, who has retired after 40 years' service.

OBITUARY

The funeral recently took place at Accrington of Mr. JAMES ALFRED BARON, aged 73, for many years on the clerical staff of Accrington District Gas Board.

* * *

Mr. JOHN HUDSON, who had recently retired from the position of Manager of the Pickering Gas and Water Company, died unexpectedly on Jan. 3 at the age of 72. Mr. Hudson had been with the Company for over 40 years, and during the past 20 years had been Manager.

* * *

The death is reported at the age of 75 of Herr REINHOLD BERGFELD, the Chief Engineer of the Bamag-Meguin Gesellschaft, Berlin. The deceased was a leading German authority on gasholder construction and had been long associated with the German Union of Gas and Water Engineers.

* * *

Mrs. SHAW, wife of Mr. LEWIS SHAW, Manager of the Rothwell Gas Light Company, to whose illness reference was made recently in these columns, passed away on Jan. 5 at the nursing home where she had been for some weeks. The interment took place yesterday (Tuesday) at Kirkburton, nr. Huddersfield.

Correspondence

Economics of the Summer and Other Load Problems at Walsall Gas-Works

SIR,—I regret that in giving the capacity of our Humphreys & Glasgow carburetted water gas plant in my Paper of the above title, I incorrectly stated that its nominal capacity is 1¼ million c.ft. of 450 B.Th.U. per c.ft. gas per day.

This should have been 1½ million c.ft. of 500 B.Th.U. per c.ft. per day, using coke of 94% fixed carbon.

There is no reason to doubt that this plant can produce its guaranteed figure under the conditions stated.

Yours, &c.,
S. BROCKBANK.

Walsall Gas Department,
Jan. 2, 1935.

Our Electrical "Friends"

SIR,—The figures in your excellent "JOURNAL" relating to the increased output of our competitors, the electrical industry, showing a 13% increase in sales, are, to say the least, "striking," and should be sufficient to make the Gas Industry wake up and realize that the so-called "friendly competition" is nothing of the sort, but is actually an undercutting competition.

The electrical industry has spent over £50,000,000 in the past few years on the Grid, and has recently issued further stock to pay the interest, &c., on this capital. Put simply, this means that they are at present selling at under cost to build up their output and business, much to the detriment of the Gas Industry. It is now the time for the Gas Industry to strike back with similar methods, to such an extent that the electrical industry fails to maintain its scheduled increase in sales, when it would find itself saddled

with a large debt which could only be met by increasing the price per unit.

The Gas Industry has been stationary now for several years, and unless it combines in a very short space of time and acts as a whole it will in later years be regretting that it did not strike while the iron was hot. Such drastic methods as our "electrical friends" are using can only successfully be met by similar methods in this Industry, and it is up to the persons now responsible to see that the next generation do not blame them for letting opportunities pass in the same way that the Railways have done.

The electrical industry is young and pushing, with no sentimental thoughts about the Gas Industry, and it is past time that all our sentimental talk about "electrical friends" was cut out and we got down to brass tacks. What is now needed is a central figure to lead the Industry—one who will get the hundreds of undertakings to work together as one unit—and all personal feelings should be dropped in one concerted effort to put the Industry well and truly on the upgrade again.

Yours, &c.,
A. K. GOULD.

Gas-Works,
Shipley, Yorks,
Jan. 7, 1935.

News In Brief

With this Issue of the "Journal" is published the Index to Vol. 208, covering the October-December quarter of 1934.

Some Draft Rules for the testing of dry gas pressure regulators for houses and tenements have lately been issued by the German Union of Gas and Water Engineers.

Applications are Invited by the Morecambe and Heysham Gas Department for the position of Distribution Superintendent at a salary of £260 per annum.

Change of Name.—The name of the Bishop's Stortford, Harlow, and Epping Gas and Electricity Company, in accordance with the Bishop's Stortford Gas Order, 1934, has been altered to Bishop's Stortford, Epping, and District Gas Company.

For the Third Time in One Week and the fourth in three weeks, the electricity supply in Alyth failed on Dec. 29. The breakdown lasted nearly three hours and occurred in the evening. Patrons of the local picture house were compelled to leave, being given readmission tickets.

Sir Francis Goodenough, C.B.E., Executive Chairman of the B.C.G.A. and President of the Incorporated Sales Managers' Association, was among the distinguished contributors of messages, discussing "Hopes and Prospects for 1935," in the Dec. 22 issue of the *Newspaper World.*

The Gas Industry as a Career is the subject of an article by Mr. J. R. W. Alexander (Secretary of the Institution of Gas Engineers) in this month's issue of the *Journal of Careers.* He traces the recent progress in the Industry, and points to the substantial opportunities open to young men therein at the present time.

A Novel Form of Publicity has recently been evolved by the B.C.G.A., who are supplying paper table napkins for hotels and restaurants with the following wording imprinted on one corner: "Here's Hoping you Enjoyed your Luncheon. All the cooking in this Establishment is done by Gas, which ensures Cleanliness and Perfect Cooking."

A Defence of Gas for Street Lighting was put forward at Lytham St. Annes Council by Councillor Bell, who protested against the change to electricity. He said the Corporation had commitments of £130,000 on their Gas Undertaking, and they could increase the consumption by 75%. To reduce the consumption by this conversion would throw the cost on the ratepayers.

Broxburn Gas Consumers will receive their supply from the Edinburgh Corporation Gas-Works after Jan. 15, on which date the bulk supply will be officially turned on. The ceremony takes place at noon, and a luncheon is to be held afterwards in the North British Station Hotel, Edinburgh. Consumers in Broxburn will obtain their gas at a cheaper rate as a result of the new arrangement.

Saar Long-Distance Supply.—Our German contemporary *Das Gas- und Wasserfach* announces that a contract has been arranged between the Ferngas Gesellschaft, of Saarbrucken, and the Plalzische Gaswerke Gesellschaft, of Ludwigshafen, under which the first-named concern will take over the long-distance supply of gas to Mannheim, Ludwigshafen and district from coke ovens in the Saar.

Illuminating Engineering Society.—The Twenty-Sixth Anniversary Dinner of the Society will be held at the Trocadero Restaurant, London, on Feb. 5, with the President, Mr. H. Hepworth-Thompson, in the chair. The Rt. Hon. William Ormsby-Gore, M.P. (First Commissioner of Works and Public Buildings), has accepted an invitation to be present. The dinner will be followed by dancing and a cabaret show.

Sanction to Borrow a sum of £5,000 for hire-purchase cookers is being applied for by the Birkenhead Gas Committee.

The Acting Premier (Mr. Macfarlan), responding to the toast of "Our Guests" at the luncheon of the Victorian Centenary Gas Congress, thanked Mr. P. C. Holmes Hunt for his assistance and advice to the Government when it was formulating the Gas Regulation Bill, and also for his help in its administration. The Act had proved itself to the satisfaction of the Government, Mr. Macfarlan said, to be fair to both consumers and gas undertakings.

Good Publicity was recently secured for the Sheffield Gas Company in two attractive supplements published by the *Sheffield Telegraph* on Dec. 28 and 31. In both instances the Company secured the front page for two very striking advertisements, while in the contents much interesting matter is to be found relating to the industrial and domestic application of gas. Of particular interest is an article by Sir Francis Goodenough on "Gas Grids and the Future."

"**Aluminium Facts and Figures**" is the title of a recent publication by the British Aluminium Company, Ltd., Adelaide House, King William Street, E.C. 4. This book, which contains over 160 pages of useful matter, is divided into two sections which deal with the various forms and sizes and the working and finishing of aluminium respectively, and should prove very useful to all who are interested in the utilization of the metal. A thumb index is provided for the more general references, but a full index at the back of the book should find anything particular the reader may require.

Iron Roads.—A very interesting gravure brochure has recently been published by the Stanton Ironworks Company, Ltd., Nottingham, describing the 3-mile Stanton Iron Road which runs through the Mersey Tunnel. Great advantages are claimed for this type of road, and if, as is pointed out in the publication, the initial outlay on the Stanton Iron Road is higher than that on some materials of a much less permanent nature, the first cost is strictly competitive with other hard-wearing surfaces and lower than that of stone setts. The Company also describe the manufacture and assembly of the 82,000 tons of segments forming the 44-ft. diameter tube between Liverpool and Birkenhead.

1935 "JOURNAL" DIRECTORY.

Page 56. ROCHDALE. C. H. Bamber appointed E. & M.

Page 60. SEAFORD. Undertaking amalgamated with Eastbourne Company.

Page 99. AMALGAMATIONS, GROUPS, &C. It is regretted that the Newquay (Cornwall) Gas Company, Ltd., was erroneously included among the Undertakings of the South-Western Gas and Water Corporation, Ltd. The origin of our mistake was the Press notice announcing that the Corporation had acquired the Newquay Water Undertaking.

Special attention is directed to the information supplied in the "JOURNAL" for Dec. 26, pp. 935 and 936, and for Jan. 2, p. 29.

Pages 102 and 104. MANLY (N.S.W.). Messrs. Wm. Coward & Co., Ltd., appointed Agents.

Page 103. PARKES CORPORATION (N.S.W.). Make, 9 millions of 500 B.Th.U. Consumers, 601.

Page 137. For ROSEWARE read C. L. ROSEWARNE.

GAS FLOODLIGHTING AT YORK

The accompanying beautiful examples of gas floodlighting were among those shown by Mr. H. E. Bloor, of York, in illustration of his paper before the Illuminating Engineering Society on Dec. 11, which was published in the "JOURNAL" for Dec. 19 last.

Ainsty Hotel.

School for the Blind.

Hospitium—Museum Gardens.

That a public demand for floodlighting would come Mr. Bloor has never entertained any doubt. The fact that a few years have sufficed to ensure the inclusion of floodlighting in any scheme of illuminations is evidence that already the public mind is being formed in the direction indicated. Therefore he set on foot experiments to determine whether gas could contribute to the development of floodlighting.

The Guildhall.

Gas floodlighting presents certain advantages and suffers from disabilities, said Mr. Bloor. The large radiating surfaces of the mantle, relative to the light emitted, render gas light a little difficult to focus so as to throw powerful beams of light. But the effect produced by reflectors is excellent for illuminating large surfaces, when the light source can be placed well back from the fascia.

A Boon for Display Men.

A publication that will find a ready welcome among display men throughout the country has recently been issued by the Parkinson Stove Company, Ltd., Stechford, Birmingham. The "Book of Display" itself is an eloquent testimony to the publishers' ability to advise on the subject of display work. The booklet, which is altogether a tasteful and striking effort, has been compiled in the Advertising Department of the Company, and each display has been carefully designed to be simple in arrangement yet effective in use so as to give the best possible sales value.

Mr. Frederick Backhouse, the Parkinson Display Manager, has arranged the contents in a logical sequence, and a few pages of general hints and advice are followed by a section dealing with the construction of such standard fitments as wooden tiers, screens, and stock showcards, which are a very necessary and economic investment, for they can be arranged in numerous ways, thus making a constant change of display simple and effective.

Some examples of displays arranged by the Company are then given, and these serve to demonstrate how different topical events can be linked up with the showroom window. The importance of this subtle link is recognized by all who have made a study of window display, and those who experience any difficulty in this matter will be assisted in no small way by the straightforward examples given in the publication.

A series of draping charts, window masks, and 54 different shades of crêpe paper with reference numbers and names complete the publication. The charts give examples of the various drapings suitable for any particular display. Colours suitable for the various drapings are numbered and can be followed by reference to the colour chart at the end of the book. The utility of this reference system will readily be appreciated by all display men, who should have no difficulty in obtaining the precise colour they require. The draping charts are drawn to a scale of ½ in. to the foot, and the publishers have not failed to appreciate that showroom windows vary considerably in construction and dimensions, and they have therefore included four window masks in a pocket at the end of the book. These masks are graduated to the same scale as the draping charts, and accommodate four window sizes from 14 ft. by 8 ft. to 8 ft. by 8 ft. By placing the mask most suitable for any particular window over the display draping, the proportions of the draping are reduced, and the exact point where each tube or draping begins or ends is indicated.

Rotherham Adopts the 4,000 Unit.

Extension of the Two-Part Tariff System.

The Rotherham Corporation has decided to adopt a Gas Unit of 4,000 B.Th.U. for the purpose of enabling the cost of gas for heating to be easily determined.

Under the two-part tariff system of charge domestic consumers in Rotherham, after payment of a small fixed charge, can obtain 12 gas units for 1d.

In response to many applications, the Corporation has now decided to extend the two-part tariff system of charge to cottage property, in which small businesses are carried on, also to small licensed premises where it is not convenient to give separate supplies to the domestic and business portions of the premises.

Institution of Gas Engineers.

Members of the Institution of Gas Engineers proposing to attend the 72nd Annual General Meeting of the Institution in London from June 4 to 7, 1935, are advised to secure hotel accommodation at once, since such accommodation is likely to be difficult to get later on owing to the "London Season," the Celebration of the Silver Jubilee of the King and Queen commencing on May 6, the King's Birthday on June 3, and Whit-Monday on June 10. The Reception and Dance will be held at the Park Lane Hotel, Piccadilly, London, W. 1, on Tuesday, June 4.

The 7th Autumn Research Meeting of the Institution will be held in London on Nov. 5 and 6, preceded by the 2nd Annual Dinner of the British Gas Federation on Nov. 4, at Grosvenor House, Park Lane, London, W. 1.

There being no urgent business to transact, the following Meetings of the Institution were cancelled:

Tuesday, Jan. 8, 1935:

9.45 a.m.	Finance Sub-Committee.
10.30 a.m.	Membership Sub-Committee.
11.15 a.m.	General Purposes Committee.
12.30 p.m.	Benevolent Fund Committee of Management.

The necessary financial business was transacted by the President, the Chairman of the Finance Sub-Committee, and the Hon. Secretary, any interim payments to be submitted for confirmation at the Meeting of the Finance Sub-Committee on Feb. 11, 1935.

Better Trade in Birmingham.

Substantial Increase in Use of Gas.

With the improvement in trade which has been gradually manifesting itself in Birmingham during the last 18 months there has been a substantial increase in the use of gas for industrial purposes. There has been a large increase in the numbers of new gas furnaces and general industrial gas appliances, as manufacturers have found the need for the extension of heat-treatment operations.

This increase is not confined to any one trade, but is spread over the large number of trades and heat processes carried out in practically the whole of the 4,000 manufacturing establishments using gas in the city.

The total amount of gas used in Birmingham during the year ended September, 1934, was 14,515,109,000 c.ft., compared with 13,774,627,000 c.ft. for the year ended September, 1933. Of this amount it is estimated that the use of gas in Birmingham factories for the year to September last amounted to 3,467,595,000 c.ft., an increase of 15% over the previous corresponding twelve months.

Substantial increases are recorded in several directions.

The following table gives the figures for a number of trades:

—	No. of Firms.	Total Consumption.	Increase.
		C.Ft.	C.Ft.
Motor-car production	12	744,000,000	75,000,000
Motor-car and cycle accessories	5	283,000,000	46,000,000
Cycles	9	146,000,000	30,000,000
Electrical goods	3	122,000,000	18,000,000
Non-ferrous metal trades (including hot brass stamping works)	10	206,000,000	35,000,000
Food production (biscuits, chocolate and sweet manufacture, confectionery, &c.)	4	151,000 000	30,000,000

It is pointed out by Dr. C. M. Walter, the head of the Industrial Research Department of the Birmingham Undertaking, that these increases show quite definitely that manufacturers are now realizing that in considering production costs the B.Th.U. cost of the fuel used is in many instances no criterion upon which to work. He lays stress upon the importance of a careful consideration of the "all-in" cost of production whatever form of fuel is employed.

The development of the special section of the Birmingham Gas Department to deal with the industrial application of gas has extended over a quarter of a century. In that time every industry has been catered for as far as possible in a special way, and a service has been instituted in the city of which manufacturers can take advantage at very short notice.

The possibilities of the use of gas in the heavier industries, such as for the production of forgings, have been considerably accelerated. Probably, a larger amount of forging is carried out in the Birmingham district than many people realize. Recently large-scale experiments have been made for several firms with gas-fired furnaces in their forges, replacing both solid and liquid fuel.

Southend-on-Sea.

West's Gas Improvement Company now inform us that in the paragraph on p. 28 of the "JOURNAL" for Jan. 2, relating to the installation of Glover-West vertical retorts ordered by the Gas Light and Coke Company for their Southend-on-Sea Station, the details given require some modification. Actually, there will be 68 retorts in the new unit, and the nominal daily gas-making capacity will be 4 million c.ft.

Forthcoming Engagements

January.

12.—SCOTTISH JUNIOR GAS ASSOCIATION.—Joint Meeting at Glasgow. Paper by Mr. Stephen Lacey.
14.—GAS COMPANIES' PROTECTION ASSOCIATION.—Meeting of Committee, 2.30 p.m.
16.—B.C.G.A.—Meeting of Executive Committee, 11 a.m.
16.—B.C.G.A.—Meeting of General Committee, 2.30 p.m.
17.—S.B.G.I.—Council Meeting, 2.30 p.m.
18.—SOUTHERN ASSOCIATION (WESTERN DISTRICT).—Commercial Meeting, Rougemont Hotel, Exeter, 2.30 p.m.
19.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Sheffield. Paper by Dr. Fritz Gummert.
19.—WALES AND MONMOUTHSHIRE JUNIOR ASSOCIATION.—Meeting at Portheawl. Paper by Mr. G. Thomas.
23.—B.C.G.A.—Manchester District Meeting, Manchester.
24.—B.C.G.A.—Yorkshire District Meeting, Leeds.
25.—B.C.G.A.—Northern District Meeting, Newcastle-on-Tyne.
25.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting and paper by Mr. S. F. Dunkley.
26.—WESTERN JUNIOR ASSOCIATION. — Visit to Gloucester.
31.—B.C.G.A.—South-Western District Meeting, Exeter.

February.

5.—I.G.E. Research Executive Committee, 2.30 p.m.
6.—MANCHESTER AND DISTRICT JUNIOR ASSOCIATION.—Visit to Stretford. Paper by Mr. W. Hodkinson.
7.—B.C.G.A.—Eastern District Meeting, Cambridge.
7.—MIDLAND JUNIOR ASSOCIATION.—Meeting and paper by Mr. F. H. Lesley.
9.—WESTERN JUNIOR ASSOCIATION. — Meeting at Bridgwater.
9.—SCOTTISH JUNIOR ASSOCIATION (EASTERN DISTRICT). Visit to Leven. Paper by Mr. C. L. W. Berglin.
9.—SCOTTISH JUNIOR ASSOCIATION (WESTERN DISTRICT).—Meeting and paper by Mr. T. R. Sawers.
11.—I.G.E. General Purposes Committee, 3.15 p.m.
12.—I.G.E. Council Meeting, 10 a.m.
14.—B.C.G.A.—Midland District Meeting, Birmingham.
15.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting and paper by Mr. P. F. Scarth.
16.—WALES AND MONMOUTHSHIRE JUNIOR ASSOCIATION. Meeting at Port Talbot. Paper by Mr. West.
16.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Barnsley. Papers by Messrs. V. J. J. Siddons, R. H. McCulloch, and A. Pickard.
21.—B.C.G.A.—South Wales District Meeting at Cardiff.

UNDER THE LENS

By Quidnunc

His Pan-Electric Worship

The rival claims of gas and electricity were recently analyzed by a leader of public opinion who is also a trenchant economist. I refer, of course, to the Mayor of Lytham St. Annes. His Worship's weighty pronouncement was made from the platform of the Baths Assembly Rooms in Lytham, at the official opening of an exhibition of electrical appliances.

Poison and Germs.

The Mayor began with a few words of praise for electricity. If there was anything in this world that the people of Lytham should support (he said), it was the advancement of electricity.

"Electricity was health, brilliant, strong, and powerful. Electricity to-day was propelling ships across the ocean. It was dashing trains along the lines, and in the near future they would see no steam engines on the railways. It would be electricity. *There was no poison in electricity for them to breathe. It was entirely free from germs.* It was easily used. They did not need to spoil the wall by striking matches."

No doubt an ungenerous critic could find faults in this passage from His Worship's address. For instance, there are some railway passengers who would not relish the prospect of being "dashed along the lines" by electricity. Again, the references to "poison" and "germs" might be wrongly interpreted by the ignorant as covert imputations against other kinds of fuel. It is possible, too, that many residents of Lytham, even those who use gas, have abandoned the eccentric method of striking matches which the First Citizen seems to favour.

Fair Play for Gas.

These, however, are minor blemishes on a statesmanlike performance. The old English virtue of fair play is strongly rooted in the Mayor of Lytham St. Annes. Having stated the merits of electricity, he put in a courteous word for the Chairman of the Gas Committee:

> "He had a great deal of sympathy with the Chairman of the Gas Committee. No doubt if he (the Mayor) were the Chairman of the Gas Committee he would fight as long as he could for that Committee."

This is a handsome admission; and the Mayor followed it up by the announcement that "it was not the intention of the Council to sweep away every gas lamp in Lytham." But the Mayor did not allow his enthusiasm for gas to run away with him. He proved himself a village Rupert of Debate:

> "They were told that Westminster had gas. That was quite true. They knew they had a lot of gas; sometimes they had nothing else [laughter], but he would like to remind the Chairman of the Gas Committee that there were 45 miles of electric light in Westminster."

Having made this rather original joke about gas in Westminster, the Mayor emphasized his impartiality:

> "He was not a member of either the Gas or the Electricity Committee, but he wanted to see that Borough electrified as soon as they could get it with due regard to the money they had spent on gas. . . . The advancement of electricity could not be stayed."

Economics for All.

The Mayor wound up his address with a brief popular exposition of political economy. He urged his audience to buy freely from the tradesmen who were showing electrical appliances at the exhibition, and spoke strongly against the folly of hoarding money:

> "The more they hoarded money the more unemployment they would have and the bigger the taxation. It was false policy. It was all right a Corporation being economical with someone else's money, but it was different with their own. The hoarding of money was a National disgrace, and he hoped this Christmas they would make the faces of their tradesmen smile with joy. . . . The Mayor, in conclusion, said that he hoped that those who had not already adopted electricity would do so. Next year they would probably get a reduction in the price of electricity. . . . Gas could not be expected to develop in the same ratio as electricity, and he could not hold out much hope for gas."

No Smiles of Joy.

After this rousing peroration, the members of the audience might have been expected to stampede in the direction of the electrical appliances, with the laudable object of making the faces of the tradesmen "smile with joy." Unfortunately very few people came to hear the Mayor speak; and it is probable that they were attracted more by His Worship's eloquence than by the intrinsic interest of the electrical display. At any rate, no smiles of joy were registered among the tradesmen, unless it was during the Mayor's speech. From the sordid commercial point of view, the exhibition was a complete frost. The comment of the *Lytham Times* makes one despair of human nature:

> "There has been much complaint that the residents have not patronized the electrical exhibition in the Baths Assembly Rooms at Lytham, as they might have done. It is certainly discouraging, when a considerable sum has been sunk in providing an attractive exhibition, to find that the rooms have been empty and the staff gazing at vacant places when they should have been convincing the public as to the virtues of electricity in cooking, heating, and lighting by electricity."

Such Men are Dangerous.

It would appear also, from the *Lytham Times*, that there are certain heretics on the Council who do not share the Mayor's views on electricity. Some of them, indeed, openly advocate the use of gas; and one is even quoted as saying that "when the best is given with gas, the lighting is preferable to electricity." It is hinted, too, that the Council is to blame for not making better use of the gas supply for lighting this seaside town, and that local politics are responsible for the divergence of views on lighting policy. As the *Lytham Times* observes, "there is evidently a quarrel to be straightened out, and in the process let us hope that the street lighting of Lytham will greatly benefit." A pious hope!

Do not smile at the delusions of the Mayor of Lytham St. Annes. He is not an isolated phenomenon in local life. We must keep him and the like of him in mind when we talk airily of the "education of the public," or read of strange decisions made by local authorities in respect of lighting and housing. Ignorance, prejudice, and Bumbledom are worse enemies to the Gas Industry than straight competition can ever be.

Radyr's Bright New Year.

Radyr, a village hitherto illuminated at night solely by the lights of private houses and the headlights of vehicles, has been transformed into a model village so far as street lighting is concerned.

For some twenty years the question of street lighting in Radyr has been under discussion at the meetings of the Parish Council, but only recently, under the leadership of Dr. Reginald Melville Hiley, who was appointed Chairman in March of last year, and the new Clerk of the Council, Mr. Ellis Lewis, have any definite steps been taken in the matter. Fifty-six gas lamps, each of 125 candle-power, have been provided for the district between Radyr Chain and Morganstown.

The Parish Council have given many months' consideration to the provision of an economical lighting system for the area, and in conjunction with the staff of the Cardiff Gas Light and Coke Company an installation was decided upon which, while not disturbing the natural beauty of the district, at the same time adequately meets the desire for modern lighting.

The lamps and columns are the latest in street lighting equipment—a new concrete lamp pillar has been adopted, its finish and design being particularly suitable for their positions—while the lanterns are constructed to give a pleasing effect and adequately fulfil their purpose.

Twin incandescent burners are used in each lamp, which is fitted with chromium reflectors to distribute illumination to the best advantage.

On Jan. 1, near the Radyr War Memorial, people watched Dr. Hiley light the first lamp. Sir Lewis Lougher, J.P., and representatives of the Cardiff Gas Light and Coke Company, were present.

Gas Appliance Display.

A Question of Background.

When Mr. George H. Downing, R.B.A., of Portsmouth, an authority on window display and the author of several books on the subject, addressed members of the Liverpool Display Association, he was asked how he would arrange a display of gas fires, cookers, washing machines, wringing machines, &c.

He admitted the difficulties in arranging suitable displays for such products, and suggested settings similar to those in which the articles would be used. It was out of the question making mass displays. The appropriateness of the background had to receive special consideration. In the case of a washing machine a suitable setting would be a scullery in which there would be shown articles that had been washed in juxtaposition with an ironing table, gas iron, and other appropriate articles.

Of course, there was the novelty angle. Some of the latest types of gas cookers might attract a great deal of attention by virtue of their newness.

Ellen Terry's Preference for Gas.

How the Lyceum Theatre was first lighted by gas, 22 years after its invention by Murdoch, was described by Mr. L. G. Applebee in his paper, "A Cavalcade of Stage Lighting," read at a meeting of the Illuminating Engineering Society in London last night.

This installation proved extremely successful, and Henry Irving at the Lyceum, and Sir Augustus Harris at Drury Lane, commenced in this country the first really successful attempt at realism by the aid of light. For the first time its intensity had been harnessed, and it was largely due to their efforts that the value of stage lighting came to be realized in this country.

The control of the intensity of the light was effected by means of yalves. Irving obtained many of his coloured effects by fitting revolving colours made of silk around each burner of the footlights and sidelights.

While the Lyceum was the first English theatre to use gas for stage lighting, it was also the last to relinquish it. The late Ellen Terry was largely responsible for its retention until 1902, as she maintained that gas lighting did not reveal the marked trashiness of the scenery. Henry Emden, the scenic artist, shared her views.

West's Gas Improvement Company in 1935.

Work in Progress and in Prospect.

The past year has been for the Company one of steady progression to a climax of intense activity, and the year just beginning confronts all sections of its world-wide organization with a very full programme of work ahead.

In the course of the past twelve months orders have been placed for complete installations of Glover-West vertical retorts with coal and coke handling and waste-heat recovery plant, and in most instances with breeze-burning producers, for the Bilston Gas Light and Coke Company, the Llanelly Gaslight Company, the Southend Station of the Gas Light and Coke Company, the Stratford-on-Avon Corporation Gas Department, and the Reus Gas Company, Spain. "Repeat orders" for new units or extensions in cases where one or more Glover-West vertical retort installations were already in service have included those for the Falkirk Corporation Gas Department, the Leven Gas Commissioners, the Limerick Corporation Gas Department, the Rochdale Road Station of the Manchester Corporation Gas Department, the St. Helens Gas Department (at whose works the forerunner of the 370 Glover-West vertical retort plants since constructed or on order was installed in 1908), the Municipal Gas Department of Johannesburg, South Africa, the Roskilde Municipal Gas Department, Denmark, and the Consumers' Gas Company of Santiago, Chile. In addition to these the Cie. Gle. de Construction de Fours of Montrouge, France, has secured orders for an installation of Glover-West vertical retorts at Bourg-en-Bresse, and a second installation at Vannes.

Contracts involving the reconstruction of retorts from the original design to the current model have been undertaken for the Exeter Gaslight and Coke Company, the Belgrave Gate Station of the Leicester Corporation Gas Department, the Manchester Corporation's Droylsden Gas-Works, and the Tipton Urban District Council Gas Department.

Completed installations on the Glover-West system have been brought into regular operation during 1934 at Lurgan, Ireland (a second and a third plant), Worcester, Macclesfield (third contract), East Hull, Hawick, Scotland, Roskilde, Denmark (second contract), and the reconstructed plant at the Belgrave Gate Works at Leicester.

"Westvertical" Chambers.

The year 1934 also marked an important stage in the development of "Westvertical" carbonizing chambers. After several months' working of the plant at Tilburg, Holland, and with another at the Eastern Gas-Works of the Copenhagen Municipality on the point of completion, three further substantial contracts have been booked for installations on the new system from the Watford and St. Albans Gas Company, the Willenhall Gas Company, and the North Shore Gas Company of Sydney, N.S.W. It is intended that the last-named installation shall operate in conjunction with an existing Glover-West retort plant which has been in service at North Sydney since 1917.

Through this busy period the Technical Staff of West's Gas Improvement Company has directed constant effort towards advancement in design. New refinements in the West coke-grader and the West "Calvert" coke-cutter have brought these already well-established machines to the point of standardization, and by virtue of several further small improvements the automatic conveyor lubricator as applied to the West lip-bucket conveyor (the patent specification of this lubricator appeared on p. 44 of the "JOURNAL" for Jan. 2, 1935) may also be said to have reached finality of design. Work has been completed or put in hand during 1934 on contracts for fuel-handling, units at Askern, Birmingham, Dudley, Dumbarton, Hoylake, Leamington, Newcastle-on-Tyne, Romford, Sheerness, and Yeovil.

The Physical Society's Exhibition.

South Metropolitan Gas Company's Novel Exhibit.

The twenty-fifth Annual Exhibition of Scientific Instruments and Apparatus, organized by the Physical Society, was held at the Imperial College of Science and Technology, South Kensington, from Jan. 1 to 3.

Among the exhibiting firms of interest to the Gas Industry were the Gas Light and Coke Company, the South Metropolitan Gas Company, the Cambridge Instrument Company, the Drayton Regulator and Instrument Company, and the Thermal Syndicate Company, Ltd.

The exhibit of the Gas Light and Coke Company was chiefly devoted to the illustration of the use of pressure governors on gas-burning appliances. A demonstration set was assembled for the purpose of showing how a governor maintains a constant outlet pressure irrespective of variations, within economic limits, of gas rate and inlet pressures. The types exhibited included the Company's "Side-Flow" and "Compact" Governors and a Bryan Donkin low-pressure pattern.

A new departure was exhibited by the South Metropolitan Gas Company in the Research and Experimental Section of the Exhibition. This was a burner for producing an intermittent flame or light which should lend itself to a variety of purposes such as advertising and signalling. The burner is so designed that the air-gas mixture delivered to the bunsen tube propagates flame at a speed just greater than the linear velocity of the mixture at the nozzle of the tube, so that the flame, after burning for a short time on the nozzle, travels down the bunsen tube and is extinguished by a special device fitted inside. The fresh air-gas mixture is then ignited by a pilot flame at the nozzle, and the cycle repeats itself producing a periodic flame or light of adjustable frequency. Experiments have so far resulted in successfully producing frequencies of from 16 to 100 cycles per minute. The pilot jet is only necessary for a short time as, after the apparatus has been in operation a few minutes, the mantle becomes sufficiently hot to ignite the mixture. The burner has no moving parts whatever, and its action is absolutely automatic.

The Cambridge Instrument Company's exhibit, among its many interesting features, included a Eupatheoscope which the firm designed in collaboration with Building Research Station for the Medical Research Council. Its purpose is to measure and record a quantity analogous to the physiological sensation induced by a cool environment, and therefore forms a "comfort" meter which proves very useful in checking the efficiency of heating installations.

Together with other new apparatus, the Drayton Regulator and Instrument Company, Ltd., displayed a temperature regulator for high-temperature gas appliances, a micro-vacuum recorder for the measurement of the density of gas, and portable vacuum low-pressure recorders and indicators.

The Thermal Syndicate, Ltd., exhibited specimens of optical quality "Vitreosil," mercury vapour burners, and a fluorescence cabinet for analytical and other purposes.

New Vertical Retort Plant at Poissy

The following is a translation of an article by M. Andre C. Foucart, Managing-Director of the Ste. du Gaz et de l'Eclairage de Laon, Poissy, and Extensions, which appeared in the "Journal des Usines a Gaz" for Aug. 5, 1934, and for which we are indebted to "West's Gas."

The concession for the manufacture and distribution of gas at Poissy was granted to Messieurs Charles Foucart and Edouard Servier in 1868, and was continually renewed to their successors, Messieurs Foucart et Cie., the Ste. d'Eclairage de Poissy et Extensions, and finally the present concessionnaire, the Ste. du Gaz et de l'Eclairage de Laon, Poissy, et Extensions, administered by the author, the grandson of Charles Foucart.

I shall be permitted to recall that Charles Foucart occupied a very influential position in the Gas Industry of France, since he was one of the founders of the Ste. Technique de l'Industrie du Gaz, over which he presided in 1882. He was also President of the Cie. pour la Fabrication des Compteurs et Matériel d'Usines à Gaz from the foundation of that Company.

The first Works constructed at Poissy in 1868 by Messieurs Foucart and Servier included direct-fired settings with horizontal retorts 3 metres long. At the beginning of 1934 it included three generator settings and two direct-fired settings, all with horizontal retorts 3 metres long.

Originally the Works served only the town of Poissy. In 1894 it extended its distribution to the Couronne de Villennes-sur-Seine, and in 1913 to the three neighbouring communes of Aigremont, Chambourcy, and Orgeval.

All these localities have developed considerably, especially during recent years, on account of their pleasant situations and their proximity to Paris. The annual sale of gas has increased from 338,000 cub.m. (12 million c.ft.) in 1889 to 1,206,000 cub.m. (42·6 million c.ft.) in 1933.

It therefore became necessary to increase the productive capacity of the Works, and the proprietors, anxious to associate the Works with the progress of the region which it served, decided, in 1933, to replace the old three-metre horizontal retorts by a new retort bench, taking advantage of all the most recent progress in technique.

Choice of a System of Carbonization.

A study of modern processes of distillation was undertaken with a view to choosing the carbonizing system which would permit the best yield in gas and the greatest possible flexibility to meet variations in output. The latter, indeed, varied during the course of last year, from 88,300 to 98,900 c.ft. per day in winter, with a maximum of 123,600 c.ft., and from 148,300 to 158,900 c.ft. in summer, with a maximum of 197,800 c.ft.

Continuous carbonization, responding exactly to these two conditions, immediately became imperative, especially if account was taken of the numerous other well-known advantages which it presented. But one point remained controversial; is it a good thing to substitute continuous carbonization for horizontal retorts in small works and from what capacity can this substitution prove advantageous?

An experience of more than 20 years provides the elements for a reply to the question. Among the 35 works equipped in France alone with continuous retorts, 11 manufacture less than 353,000 c.ft. per day, and among these four manufacture less than 177,000 c.ft. In all these works it has been possible to show that the results of operation were superior to those obtained with any other system.

In England, still smaller works have been equipped. The installation of Glover-West vertical retorts at Stornoway produces less than 42,000 c.ft. per day on the average. The demand in this case, which varies from 28,000 to 56,000 c.ft., is met by two retorts, each of which constitutes a separate unit which can be put into service, let down and recommissioned independently of the other.

Among the continuous retorts the Glover-West system, by reason of the small capacity of its units, appeared to be best suited to the requirements of the Poissy works, and on May 4, 1933, the management passed the order to the Cie. Gle. de Construction de Fours for an installation of eight Glover-West retorts.

The retort bench comprises four settings each with two vertical retorts of about 8 metres (25 ft.) in height, formed of special tongued and grooved bricks. The walls of the retorts and the heating flues are constructed in siliceous materials.

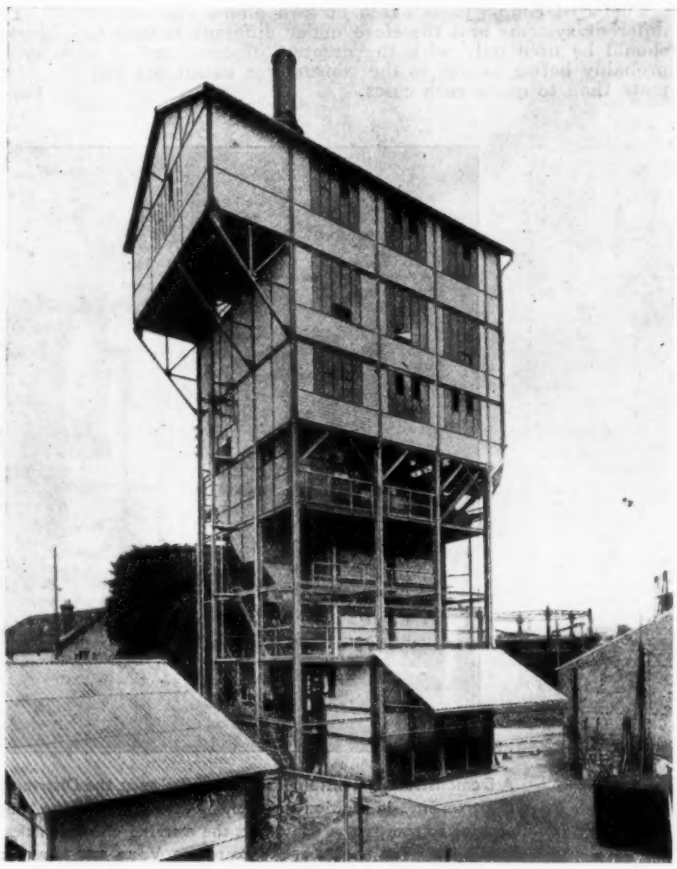
Each setting is heated by a step-grate producer, the water for the cooling of the bars being distributed by an overflow trough.

Putting into Operation.

Six retorts were put into operation in the beginning of April, 1934. The results have been satisfactory in all points; the guarantees of heating and of gas yield have been considerably exceeded.

The service of the whole installation, supervision of settings and boiler, charging and discharging of retorts, handling of coal and coke between the storage ground and the retort house, is effected by two men per shift, but these men would suffice when eight or even ten retorts were in operation.

It is to be noted that since bringing the new retorts into operation the demand for gas has increased by comparison with last year. During the month of May, it has on certain days exceeded the figure of 212,000 c.ft.



The Installation of Glover-West Verticals at Poissy.

Some Results Obtained with Gas-Fired Central Heating Boilers

by W. L. HOWE

The following is a paper read by Mr. W. L. Howe, M.Inst.Fuel, Industrial Development Engineer of the City of Nottingham Gas Department, before the Midland Junior Gas Association on Jan. 3, 1935.

It is not intended in the course of this paper to place before you either details of the layout of central heating systems or to enumerate the advantages of gas firing for the boilers supplying such systems. There are excellent text-books on the design of central heating systems available, and in any case it is considerably to the advantage of the Gas Industry to place work of this nature in the hands of a reputable firm of heating engineers, unless circumstances make it impossible, thus obtaining their help and co-operation, rather than to antagonize the heating trade by performing work which is rightly theirs. The benefits resulting from good feeling between local heating engineers and gas undertakings cannot be over-estimated.

Much has been said of the advantages of saving in labour, cleanliness, automatic control, &c., and although every consumer realizes that these are undoubtedly a great asset after he has installed and operated a gas-fired boiler, it is extremely difficult to persuade a prospective consumer to make any actual monetary allowance for these points on the running costs estimated when in competition with other fuels.

If too much stress is laid upon these points, the consumer generally feels that the estimated running cost figures are likely to be exceeded, and is immediately sceptical—a frame of mind in which it is extremely unlikely that a decision in favour of gas firing will be made.

It is preferable, therefore, to be able to place before the prospective consumer actual figures of running costs taken over a period on an existing installation similar to the one proposed, and if possible the cost of other fuels when used in conjunction with the same system.

Fuel cost comparisons based on two plants running on different systems and therefore under different conditions should be used only with the greatest of care, and it is probably better to put to the consumer a calculated estimate than to quote such cases.

In reference to central heating for private houses there is no doubt that a personal recommendation from an existing consumer is the ideal way of promoting sales, and if it is possible to obtain the help and interest of the consumer to the extent of getting him to take daily records of the amount of gas used, internal and external temperatures, and hours the boiler is in operation, a circle of friends rapidly become interested in these figures, and further sales result.

A sheet has been prepared by the Nottingham Gas Department for the purpose of collecting data on consumptions, temperatures, &c., and such sheets are distributed free to any of our consumers desiring to take records.

The use of these data in estimating the running costs of new installations is invaluable to the Department, and where boilers are installed in works or schools the weekly summary enables the works manager or whoever is in authority to keep a check on the hours of operation, consumption, and efficiency of the unit.

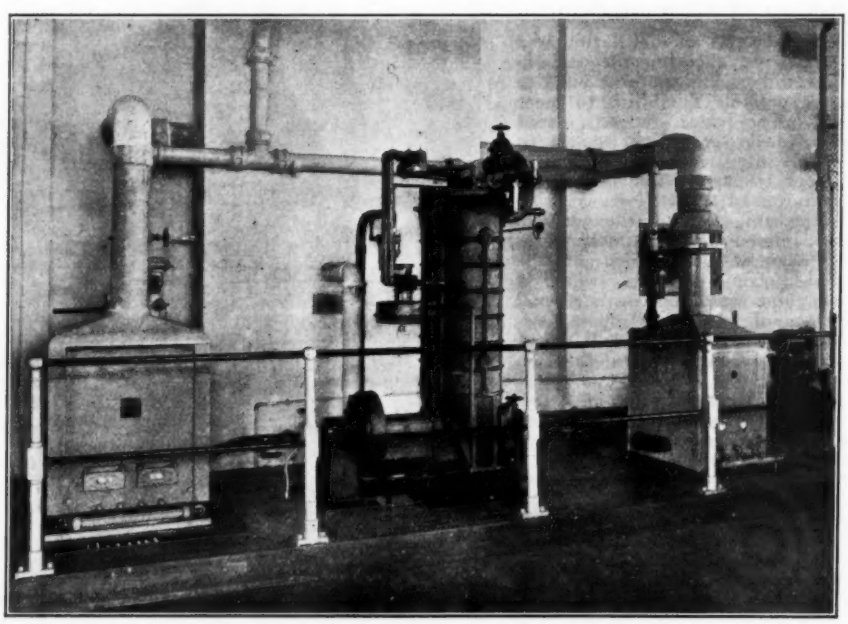
The rate of charge for gas used for central heating purposes in Nottingham is: 1s. 6d. per 1,000 c.ft. for consumptions up to 1,000,000 c.ft. per quarter; 1s. 3d. per 1,000 c.ft. for consumptions exceeding 1,000,000 c.ft. per quarter. As the consumer obtains from the summary sheet the total amount of gas used per week, it is a simple matter for him to check his running costs week by week.

In each of the following examples hot water is the system of heating employed, operating either by gravity or with an accelerator installed in the circuit.

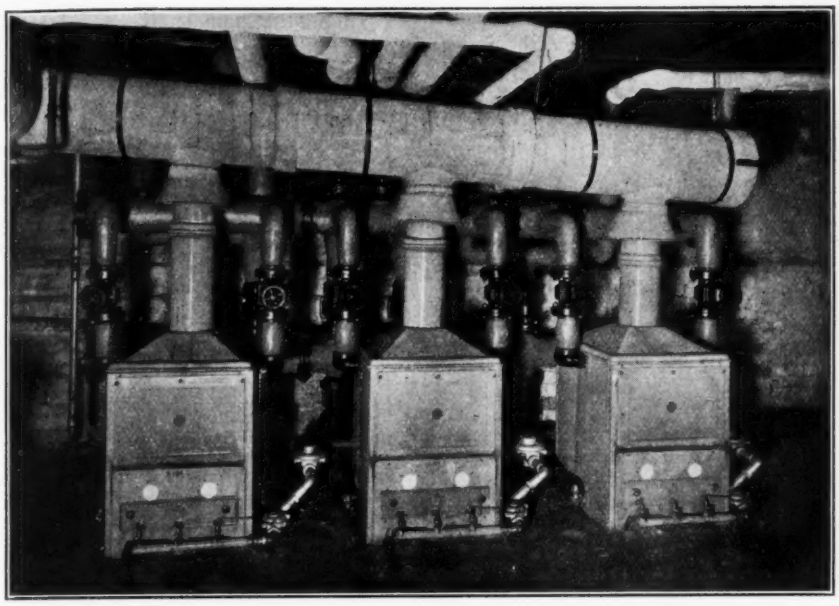
Gorse Hill Elementary School, Stretford.

The first example is of a Spencer-Bonecourt water heater installed at the Gorse Hill Council School, Stretford, in the area of supply of the Stretford and District Gas Board.

During the season 1932-33 the boiler worked 818 hours in 146 days, being an average of 5½ hours per day, while



A Demonstration Central Heating Installation at the Distribution Department of the City of Nottingham Gas Department. In addition to supplying the heating of the building, this plant is of great assistance in demonstrating to prospective consumers the working characteristics of three types of gas-fired boilers under ideal conditions. The boilers are of Potterton, Vesta, and Ideal manufacture with a combined output of 841,000 B.Th.U. per hour.



A gas-fired boiler installation for the central heating of a Nottingham Garage, consisting of three Ideal 2.G.B.7 boilers with a combined output of 810,000 B.Th.U. per hour. The boilers supply four separate circuits, and by means of valves on flow and return pipes the number of boilers in operation can be adjusted to suit the requirements of any one circuit.

during the season 1933-34 the boiler worked 800 hours in 144 days, again an average of 5½ hours per day.

This school is a one-storey building of H section in plan consisting of 17 classrooms, each approximately 40 ft. by 50 ft., a central hall 180 ft. long by 42 ft. wide, 4 cloakrooms, porches, and corridors, &c. Heating is carried out by means of hot water pipes and radiators operating on the two pipe systems. The main water flow is diverted into three self-contained systems, the returns of which are collected into a main header. The system is accelerated.

The water heater is a No. 4 B.H. Spencer-Bonecourt capable of an output of 1,071,600 B.Th.U. per hour. Thermostatic control is fitted, together with automatic damper equipment, and clock control for setting the installation to work at a predetermined time.

The total area of radiation in pipes and radiators amounts to approximately 4,400 sq. ft., requiring some 600,000 B.Th.U. per hour.

Previous to the installation of this gas-fired water heater a Britannia coke-fired boiler with a rated output of 625,000 B.Th.U. per hour had been in use. It must be stated in fairness that the coke-fired boiler was undoubtedly overloaded, and difficulty had been experienced in obtaining optimum temperatures in very cold weather.

Comparison of Costs.

COST OF OPERATING COKE-FIRED BOILER.

Season 1931-32

	£	s.	d.
Coke, 65 tons 5 cwt.	74	8	10
Coal, 7 tons 7 cwt.	8	17	10
Firewood, 18 bags	4	2	6
	£87	9	2
Length of season, 27 weeks.			
Average cost per week	£3	4	9

COST OF OPERATING SPENCER-BONECOURT WATER HEATER.

Season 1932-33.

	£	s.	d.
Length of season, 30 weeks	97	4	8
Credit for demonstrations	0	14	7
6,618 therms at 3·5d. per therm	£96	10	1
Average cost per week	£3	4	4

Season 1933-34.

Length of season, 32 weeks.			
6,612 therms at 3·5d. per therm	£96	8	8
Average cost per week	£3	0	3

The amount of 14s. 7d. credited to the cost figure for the season 1932-33 represents 50 therms used in demonstrating the boiler to a visiting deputation at a period when normally the boiler would not have been in use.

COST OF OPERATING SPENCER-BONECOURT BOILERS.

Season 1933-34.

Week Ended	Days per Week.	Gas Consumed, Therms.	Minimum Outside Temp., °F. 7 a.m.	Average Outside Temp., °F. 7 a.m.	Cost at 3·5d. per Therm. £	s.	d.
1933							
Oct. 1.	3	25	50	50·3	0	7	4
8.	4	84·5	40	46	1	4	8
15.	5	88·5	44	46·2	1	5	10
22.	5	125	42	45·2	1	16	5
29.	5	137	38	46·2	1	19	11
Nov. 5.	3	199·5	37	40	2	18	1
12.	5	231	37	43·4	3	7	5
19.	5	266	30	37·6	3	17	7
26.	5	199·5	35	42·2	2	18	1
Dec. 3.	5	293·5	32	35·4	4	5	6
10.	5	362	25	29·8	5	5	4
17.	5	318	30	31·4	4	12	9
24.	5	312	32	33·8	4	11	0
1934							
Jan. 14.	5	293	34	36·4	4	5	6
21.	5	266	36	37·8	3	17	7
28.	5	317	31	34·4	4	12	6
Feb. 4.	5	324	26	32·6	4	14	6
11.	5	270	38	40	3	18	9
18.	5	266	34	33·8	3	17	7
25.	5	266	38	38·8	3	17	7
Mar. 4.	5	418	27	31·2	6	1	11
11.	5	236	36	36·4	3	8	10
18.	5	296	28	35·6	4	6	4
25.	5	248	33	35·6	3	12	4
April 1.	3	135	35	37·3	1	19	4
15.	5	205	32	39·8	2	19	9
22.	5	73	43	48·4	1	1	3
29.	5	125	43	43·4	1	16	5
May 6.	3	48	45	46·3	0	14	0
13.	2	37	49	49	0	10	10
20.	4	120	39	42	1	15	0
27.	2	30	49	49	0	8	9

Trent Bridge Boys' School, Nottingham.

This is a one-storey building of rectangular section in plan consisting of nine classrooms each approximately 25 ft. by 25 ft., a central hall 75 ft. by 26 ft., cloakrooms, conveniences, &c.

Heating is by 4-in. hot water pipes and radiators, the total area of radiation amounting to approximately 5,300 sq. ft. The internal volume of the school amounts to approximately 120,000 c.ft.

The gas-fired water heater is of the Vesta C2 type with a rated output of 800,000 B.Th.U. per hour.

Previous to the installation of this boiler the Boys' School was heated by a Beeston 9-section boiler with a rated output of 720,900 B.Th.U. per hour.

Comparison of Costs.

Cost of Operating Coke-Fired Boiler.

The whole school actually consists of three blocks of the size described above, each section being heated by a boiler of the same size.

For the season 1931-32 the cost of heating the three blocks was £256 and in 1932-33 the cost was £223, the average price paid for coke being 27s. 6d. per ton delivered.

A figure of £85 was therefore given us by the Education Authorities as the cost of heating the Boys' School, and assuming a 30-week season, average cost per week = £2 16s.

COST OF OPERATING VESTA C.2 WATER HEATER.

Season 1933-34.

	£	s.	d.
Cost of heating boys' school	85	17	6
Plus gas used for initial testing	0	10	6
5,472 therms at 3·791d. per therm	£86	8	0
Average cost per week	£2	17	7

For the 1933-34 season of 30 weeks the boiler worked 1,530 hours in 132 days, but due to the fact that during the colder part of the season the boiler was run overnight with a low flow temperature, it would be somewhat misleading to state that the average hours of operating were 11½ hours per day.

House Heating.

In the previous examples quoted it is obvious that the reason that gas firing could compete on such favourable terms with solid fuel is that the number of hours that the gas-fired boiler required to be in operation was considerably less than the number of hours that the previous coke-fired boiler was in use. In the case of schools heated by a coke-fired boiler it is usually the practice to keep the boiler in continuous operation throughout the heating season.

It will therefore be seen that in the heating of private houses it is essential to reduce the consumption of gas to a minimum for any given duty, as in every case the householder requires heating to be in use some 15 hours per day. It is therefore advisable to fit a clock control and a room thermostat in every case.

In the majority of installations a 15-hour per day operation is adequate—*i.e.*, the boiler is set to come into operation at 7 a.m. and to shut down at 10 p.m.

Through the asssistance of one of our consumers it is possible to give records of consumptions, temperatures, &c., of an Ideal 1 G.B.5 boiler operating a central heating system in a house containing approximately 500 sq.ft. of radiation.

The boiler was installed in November, 1933, and took the place of a Beeston coke-fired boiler.

As there are two more coke-fired boilers in operation it is not possible to give the cost of coke for the central heating boiler alone.

The total gas consumption for the season 1933-34 was 1,490 therms, representing an average consumption of 55·2 therms per week over a period of 27 weeks. Cost for season = £23 10s.

At 3·791d. per therm the average weekly cost was therefore 17s. 6d.

The boiler is set to operate for 15 hours per day for 7 days per week.

Estimating Running Costs.

It has been found that a simple formula gives fairly accurate results in estimating average weekly running costs on hot water central heating systems.

This may be given as:

$$\text{Average weekly consumption in therms} = \frac{R \times h \times H \times C}{E \times 100{,}000}$$

Where R = area of radiating surface in sq. ft.
h = B Th.U. emission per sq. ft. per hour.
(This may be taken at an average figure of 140.)
H = hours during which heat is required.
E = efficiency of boiler.
C = proportion of hours in which heat is required that boiler is on full load.

The factor C varies slightly for different types of premises, but is generally taken at 0·6 to 0·8.

Example.

Taking the example given of a house containing 500 sq.ft. of radiation to be heated by an Ideal boiler.

Hours of heating per day = 15.
R = 500 H = 15 × 7 (days) = 105 hours.
h = 140 E = 0·8
C = 0·6

$$\text{Average weekly consumption in therms} = \frac{500 \times 140 \times 105 \times 0{\cdot}6}{0{\cdot}8 \times 100{,}000}$$

Plus pilot consumption, say, 3 therms.

Total average consumption = 58 therms.
Actual average consumption = 55·2 ,,

Estimated average cost per week at 3·791d. per therm = 18s. 3d.
Actual average cost per week at 3·791d. per therm = 17s. 6d.

This formula has given excellent results in a number of cases and provides a simple method of obtaining reasonably accurate cost figures.

Where records of consumption have been taken over a heating season on an installation working under certain conditions it is worth while to check back through the formula to find the value of the "time load factor" C. This figure can then be used when estimating running costs on a proposed installation of a similar type.

The measure of success which we have had in Nottingham in the field of central heating and central domestic hot water supply may be traced to four main causes:

(*a*) The reasonably accurate estimation of running costs when desired.
(*b*) The policy of the Department with regard to relations with local heating contractors.
(*c*) Maintenance and advisory service.
(*d*) A price of gas competitive with fuel oil in a fair majority of cases.

Policy.

Mention was made at the commencement of this paper of the necessity for maintaining amicable relations with local heating contractors by passing to them all work in connection with complete heating systems or the fixing of the boilers alone. It is pleasing to note the results of this policy in the Nottingham district, where heating engineers are now ready and anxious to co-operate with the Department in its desire to extend the use of gas in this field, and are advising clients, on their own initiative, to install gas-fired boilers.

Had this policy not been adopted and the Department had held the right to fix all gas-fired boilers in the district there is little doubt that we should have had a considerably smaller number of installations in operation to-day.

It would have been necessary not only to persuade each prospective consumer that gas would prove the best fuel for his purpose, but also to overcome the opposition of the heating contractors, who in their own interests would be endeavouring to sell boilers using other fuels. Fortunately this is not the case under our present policy, and while the Department contents itself solely with the sale of gas for this purpose, the heating contractors are provided with more work through their own and our efforts.

Maintenance Service.

There is no doubt that service to the consumer plays an important part in the promotion of gas sales, and a scheme of maintenance such as is in operation in this district is invaluable in promoting confidence in the Department.

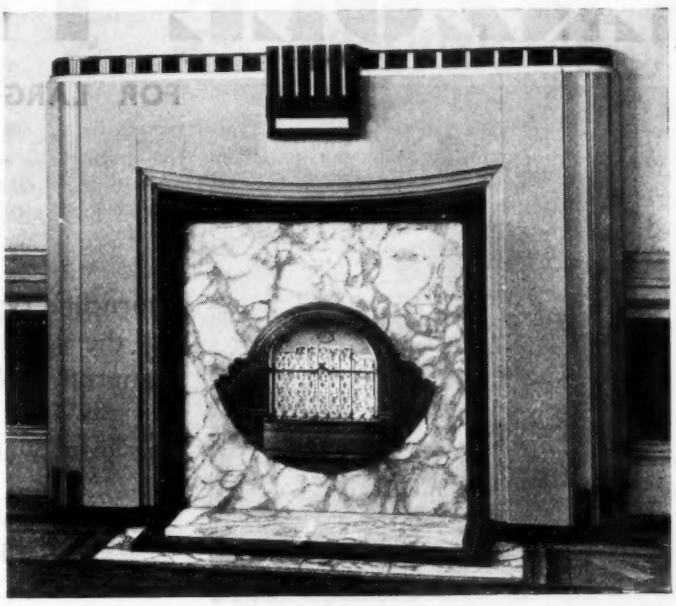
There are now upwards of 70 gas-fired boiler installations of various types either in use or on order in Nottingham, and each of these is inspected, cleaned, and overhauled by the Department once a year free of charge to the consumer. This is done shortly before the commencement of each heating season, and in addition to satisfying the Department that the appliance is in good condition, the consumer's interest in his appliance is renewed and his goodwill retained.

Rate of Charge.

It would be impossible to fix any economic rate of charge for gas which would be competitive with other fuels under all conditions, and therefore it is necessary to decide upon a rate of charge which, while giving a return to the Department, enables as much business as possible to be obtained.

In the opinion of the writer a charge of 1s. 6d. per 1,000 c.ft. for gas used for central heating purposes is an adequate and reasonable one. Although business could be, and is being, obtained in some districts at higher rates of charge, it is doubtful whether it will be retained, and the writer contends that it is preferable to obtain a large load at a slightly lower rate of charge than to obtain a few scattered installations at a high rate of charge.

The central heating field still offers considerable scope to the Gas Industry, and if developed in the right direction will yield a valuable load.



Modern Panel Gas-Fire treatment

THE GLORIA Fire is a notable design which offers distinct possibilities for the Architect or Builder in his decorative treatment of the fireplace.

It is conceived on a skilful handling of circles and half-circles in various checks, to give light and shade.

The flat flames, the absence of a protruding canopy, and the introduction of a very shallow fender, all ensure minimum projection into the room space. The connection to the gas supply is concealed so that the hearth in front is free from unsightly piping.

It can be fitted at any height from the floor level to conform to any proportion an architect may desire.

The GLORIA Fire is made in 9 and 12 Radiant sizes and provided with Duplex Burners so that either the whole of the fire or the centre radiants only can be used as required. It can be obtained in a variety of finishes to harmonize with any scheme of decoration.

Literature for your showrooms and for distribution to consumers sent on request.

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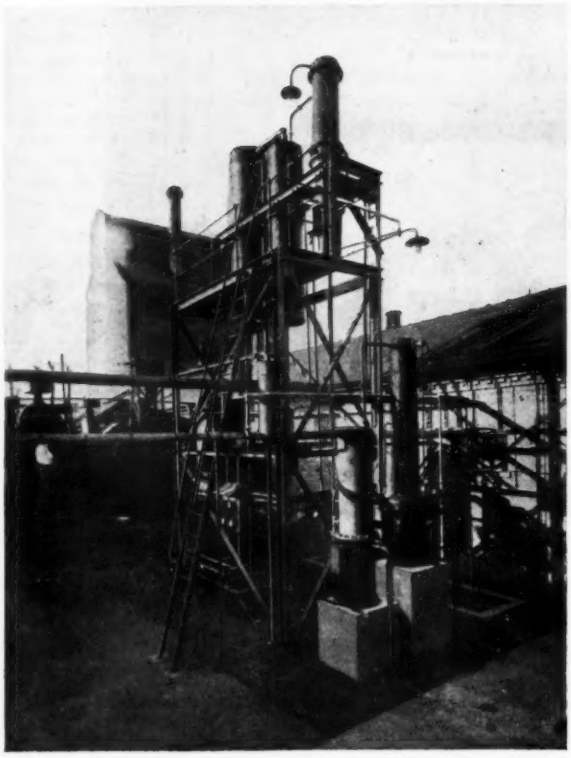
BENZOLE PLANT

FOR LARGE & SMALL WORKS.



Thorncliffe type Benzole Recovery Plant at the Hampton Court Gas Co., Hampton Wick, Middlesex.

This plant will produce :—

1·85 galls. of benzole per ton of coal distilling 93°/₀ at 120° C.

or

2·25 galls. of benzole per ton of coal distilling 85°/₀ at 120° C.

Any required variation in product can be obtained by thumb screw adjustment.

(1) Any quality of benzole guaranteed from 70°/₀-95°/₀ at 120°C.

(2) Lowest possible water, steam and wash-oil consumption.

(3) Small ground space required.

(4) Existing gas washers can be adapted.

(5) Plants in operation can be inspected.

(6) Low capital cost.

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Manufactured Solid Fuel for Heating

by
L. J. FOWLER

The following is an extract from a paper read before the Institution of Heating and Ventilating Engineers by Mr. L. J. Fowler, B.A., A.M.I.C.E., M.I.H.V.E., of the London and Counties Coke Association, at a Sessional Meeting in London on Dec. 5, 1934.

Coke is the fuel most widely used in heating and domestic boilers, but few of its users have intimate knowledge of the influence on combustion with variations in its physical and chemical properties. Reference is made below to the main factors controlling combustion, and figures are quoted from recent tests.

Rate of Combustion.—The rate of combustion is a function of the rate of oxygen supply, which is controlled by:

(1) The conditions of operation (flue, damper opening, &c.).
(2) Thickness of fire.
(3) Condition of coke.

Item 1.—With coke no abnormal draught conditions are necessary.

Item 2.—The thickness of fire is important. If the fire is too thin, excess air is admitted to the boiler in considerable quantities, and blow-holes may occur in the fire-bed. The lowering of combustion efficiency due to excess air is given in Table 1.

TABLE 1.

Carbon Dioxide, %.	Excess Air, %.	Fuel Loss, %.
5	262	37
6	202	30
7	159	25
8	127	22
9	102	20
10	82	18
11	66	16
12	52	15
13	40	14
14	30	13

If the fire is too thick the carbon dioxide formed in the lower layers of the fire is reduced to carbon monoxide in the upper layers—an endothermic action which has a cooling effect on the fire.

A suitable thickness of fire is 6 to 10 in., depending on the grade of coke used. The chief reason for the high combustion efficiency of gravity-feed coke-fired boilers is that they maintain their operation with a fire-bed of constant thickness.

Consideration of fire-bed thickness introduces the question of boiler ratings. Both in large and in small hand-fired boilers better efficiencies are obtained when boilers are of ample size for their duty. With boilers of ample size stoking can be carried out at comparatively infrequent intervals, without extreme variations in depth of fire-bed, the deleterious effect of which has already been mentioned. Furthermore, at a low rate of combustion per square foot of grate area, clinker formation is less, so that cleaning of the fire is only necessary after long periods, and thus minimizes losses due to:

(*a*) Unconsumed fuel being removed with the clinker.
(*b*) Cooling effect due to cold air passing through the boiler during cleaning periods.

Results of tests of a boiler at different rates of firing are given in Table 2.

The rate of combustion is restricted by the presence of ash or by poor grading of the coke, and, as indicated later, steps are now taken in the manufacture of gas-coke to control these factors.

Moisture Content.—Both laboratory tests and experience have shown conclusively that in spite of popular belief no improvement in combustibility is obtained by the presence of water in coke. If coke is quite dry, it is inclined to be dusty, and the most desirable water percentage is probably 3%.

TABLE 2.[1]—*The Effect of Type of Fuel and Rate of Combustion on Efficiency.*

Tests on Small Domestic Boiler.

—	Proximate Analysis of Fuel.			Rate of Fuel Combustion. Lbs./ Hour.	Efficiency. %.
	Moisture. %.	Volatile Matter. Therms/ Ton.	Ash. %.		
High-temperature coke . .	3·7	2·2	9·30	1·2	71
				1·77	68
				3·39	60
				4·27	57
Low-temperature coke . .	3·1	13·76	3·1	1·72	61
				2·14	57
				2·19	56
				4·29	53
				4·56	51
Semi-anthracitic Scotch coal	0·4	11·71	6·55	1·61	53
				1·94	56
				4·08	54

Behaviour under Slow Firing Conditions.—Failure to maintain a coke-fire in water boilers can be due to one or other of two causes—either the rate of combustion is so low that the heat loss through water-cooled walls of the combustion chamber causes the fuel to fall below its ignition temperature, or the rate of combustion may be maintained so high that the fuel is consumed before the fire again receives attention. Between these two limits lies a range of conditions which the boiler attendant must maintain by means of dampers, and regulation of air supply. To the property of the fuel which determines the width of this range, the term "flexibility" is given.

The Effect of Grading of Coke.—Table 3 shows the result of tests on the flexibility carried out on a boiler which was fired with six different grades of the same coke, containing 2·6 volatile therms per ton—*i.e.*, the calorific value of the volatile matter contained in a ton of fuel was 260,000 B.Th.U.

TABLE 3[1].—*The Effect of Size of Coke on Flexibility.*

Grade. In.	Flexibility.	Minimum Damper Opening for 8½ Hours' Combustion. ¼ In.	Maximum Period of Combustion. Hours.
2 —1	*Nil*	—	8
1½—1	*Nil*	—	8
1 —⅝	1—2	5	9
¾—½	2	4	11
⅝—⅜	4	3	16
½—¼	7	3	21

The effect of the size of the coke is very marked, smaller fuels giving greater flexibility than larger. It is not possible to take full advantage of the increased flexibility of the smallest grades of fuel, since difficulties then arise through fuel falling through the fire-bars, and through excessive clinker formation.

Table 4 shows the result of a second series of tests, made to determine the effect of maintaining the same average size of particle, but altering the limits through which the

size is allowed to vary. There is no change in the flexibility.

TABLE 4[1].—*The Effect of Closeness of Grade on Flexibility.*

Grade. In.	Flexibility.	Minimum Damper Opening for 8½ Hours' Combustion. ⅛ In.
1—½	1	5
¾—⅜	1	5

The Effect of Volatile Matter.—Tables 5 and 6 show that the percentage of volatiles in coke has a big effect on the lighting and pick-up time, and the flexibility respectively. Tests A and B in Table 5 were carried out with different boilers, and the results are not directly comparable.

TABLE 5[1].—*Relationship between Ease of Ignition and Lighting Time.*

Coal.	Coke No.	Volatile Matter. Therms/Ton.	Pick-Up Time. Mins.	Lighting Time. Mins.
A	1	4·3	78	12·5
	2	2·2	110	25·0
	3	1·3	114	25·0
	4	0·9	156	50·0
B	5	4·8	84	9·0
	6	1·2	94	14·0
	7	0·7	102	26·0
	8	0·6	117	25·0

TABLE 6[1].—*The Effect of Volatile Matter Content on Flexibility*

Volatile Matter. Therms/Ton.	Flexibility.
1·7	2
2·4	3
3·0	4
3·5	5
4·1	6

Table 7 is interesting in that it shows the reduction in lighting time by the addition of small amounts of semi-coke.

TABLE 7[1].—*Uneven Distribution of Volatile Matter.*

Mixture.	Volatile Content of Mixture. Therms/Ton.	Lighting Time. Mins.
High-temperature coke	2·6	25
High-temperature coke + 5% low-temperature fuel	3·9	15
High-temperature coke + 10% low-temperature fuel	5·5	8

Other things being equal, it is found that the larger the grade of coke the less is the trouble experienced through clinker.

Ash.—Since clinker is formed by the fusion and subsequent solidification of ash, it has been assumed that clinker formation is closely related to the fusion temperature of the ash. Experience of the operation of coke-fires at high rates of combustion indicates that this is not so, and that clinker formation can be controlled more effectively by care in operation rather than by change in the ash characteristics of the coke used.

Shale.—The presence of shale adds considerably to the formation of clinker. The ash when fused, wets the surface of the pieces of shale, and cements them together to form a solid clinker. Steps are therefore taken in the preparation of gas-coke to remove shale.

Size of Fuel.—With the use of the smaller grades of coke, the tendency to form clinker is enhanced. Experiments have shown that coke ¼ to 1¾ in. grade can be burnt at a rate as high as 6·3 lbs. per sq. ft. of grate area per hour before clinker formation is observed, but that clinker formation commenced at 4·4 lbs. per sq. ft. per hour with coke graded between ½ and ¾ in. The use of large coke as a means of avoiding clinker is, in practice, restricted by the fact which has already been pointed out that large coke reduces flexibility under slow-fire conditions.

Comparative Efficiencies of Various Fuels in a Domestic Boiler.

The figures given in Table 2 indicate that high-temperature coke is more efficient than fuels of higher volatile content. This is to be expected, as the latter fuels burn with more flame and give a higher flue-gas temperature.

The test also shows that higher rates of combustion give a lower efficiency.

Reviewing briefly the tests referred to above:

(1) The most important feature for satisfactory operation is flexibility—*i.e.*, ability to burn for long periods without attention. Flexibility is determined by bulk density—the number of pounds of fuel which can be charged on to the fire—and by the minimum rate of combustion. The latter is chiefly dependent on the volatile content, a minimum figure for this being 2½ therms per ton, but is also dependent on the size of coke, smaller grades having greater flexibility than larger.
(2) Large ash content reduces the rate of combustion.
(3) The size of coke and the presence of shale are the main factors affecting clinker formation, the fusion temperature of the ash being unimportant.
(4) Clinker troubles can generally be obviated by cooling the firebars.

A boiler of ample capacity running at low load requires less attention and gives higher efficiencies than a smaller boiler run at high load.

An interesting development is the use of semi-coke in blending. In London it is difficult to obtain, at attractive prices, non-caking coals in the quantities required—the cheap slacks having, generally speaking, too high an ash content for coke manufacture. It has been found, however, that if selected non-caking coals are carbonized at low temperatures, and the semi-coke is then blended with the caking coal, good coke can be manufactured at a considerably lower non-caking to caking coal ratio. A large plant is at present in operation in London, using semi-coke regularly for this purpose.

Preparation and Cleaning of Coke for the Market.

The Technical Committee of the London and Counties Coke Association has arranged a standard form of grading coke. The standard grades are set out in Table 8.

TABLE 8.

Name.	No.	Sizes. In.	Uses.
Large or unbroken .	1	Over 2	No. 1. Very large central-heating boilers Steam raising
Broken	2	Within the limits of 1—2	No. 2. Large central-heating boilers Open fires
Coke boiler nuts .	3	½—1½	No. 3. Small central-heating boilers Large domestic hot-water service boilers
Forge beans . . .	4	⅜—¾	No. 4. Small domestic hot-water service boilers Closed stoves. Kitchen ranges Mechanical stokers

The correct type of coke can now be produced and supplied to meet any reasonable requirement. For instance, the large coke made in continuous vertical retorts, weighing 18 to 22 lbs. per c.ft., when cut to a suitable size will burn cleanly in open grates, and the heavier cokes will meet heavy industrial loads.

The growth in popularity of the small domestic boiler has opened up a market for a comparatively reactive coke. It is found that cutting increases reactivity—probably owing to the increase in the surface area to volume ratio caused by sharpness of fracture, and coke is, therefore, nowadays specially cut in order to make it more suitable for certain markets. This not only means the introduction of an extra process, but, in cutting, considerable quantities of breeze are formed, the value of which is low compared with that of large grade coke, and it is therefore necessary to charge slightly more for cut coke. In some gas-works it is the practice to screen the coke, in order to remove all pieces less than 1½ in. in size, which contain a comparatively high percentage of ash, and to use the smalls solely as fuel in the gas-works themselves. The coke which does not pass through the screen is then graded and cut, or both, according to the requirements of the market.

During the last three years the gas undertakings which are members of the London and Counties Coke Association have spent over £1,500,000 on apparatus for improving the quality of coke.

The author is greatly indebted to the South Metropolitan Gas Company for permission to abstract so liberally from their recent publication entitled "The Solid Products of the Carbonization of Coal," which gives details of the extensive and valuable work carried out by the Company's staff on the combustion of coke and semi-coke in boilers and open fires.

[1] From "The Solid Products of the Carbonization of Coal," published by the South Metropolitan Gas Company, 1934.

The Colliery Manager's Pocket Book.*
1935 Edition.

This useful handbook—now in its 66th year of publication—is compiled specially for the colliery manager and official and is thoroughly revised in accordance with the most recent colliery practice. It contains a mine of information in a conveniently small compass and will prove indispensable to all those interested in the coal mining industry in whatever capacity. All matters connected with collieries and colliery working, administrative, legal, statistical, and technical, receive attention, including sections on Mining Progress during 1934, Coal and its Bye-Products, Mine Ventilation, Valuation, Rescue and Ambulance, Machinery, &c., together with suggestions and information of value to students and candidates for mining examinations.

The section on Coal and its Bye-Products, by Mr. R. Wiggington, should prove of interest to the Industry, dealing as it does with the uses of different classes of coal, sampling, analysis, calorific values, coke formation, storage, and the fuels derived from coal.

The Pocket Book as a whole has, in fact, now come to be recognized as a work of reference whose complete information reflects great credit on its compiler.

* Published by the Colliery Guardian Co., Ltd., 30 and 31, Furnival Street, E.C. 4. Price: Cloth, 3s.; roan (gilt edges), 4s. 6d.; calf (gilt edges), 6s.; postage 6d. extra.

Monetary.

When reviewing the year 1934 in the "JOURNAL" a fortnight ago, we remarked upon the fact that "gas as an investment is becoming increasingly fashionable." This can be proved by a study of our weekly Stock and Share List, as well as by the table at the end of the Review setting out a comparison of the current prices with those ruling a year ago of some of the leading ordinary gas stocks. The regular Stock and Share List, which has, throughout the existence of the "JOURNAL," been a special feature, must be invaluable to the gas investor; but our object just now is to draw attention to another publication which also offers great practical help, and a fascinating study, to those desirous of purchasing stocks and shares. In the world of finance, the firm of Frederick C. Mathieson & Sons, of 16, Copthall Avenue, London, E.C. 2, is universally known in connection with matters statistical, and one of the foremost of their publications is the "Handbook for Investors," which has now reached its thirty-sixth year of issue. Procurable at the price of 5s. net, this handbook furnishes a concise record of Stock Exchange prices and dividends for the past ten years of selected securities. There is a section dealing with gas, and in this particulars will be found regarding fifteen important companies. With the "JOURNAL" weekly list and "Mathieson's Handbook for Investors" on his desk, the proprietor or intending purchaser of gas stocks will have at his disposal just the kind of information that he needs. And the usefulness of "Mathieson's Handbook," of course, extends far beyond the confines of our own old-established Industry.

Gas Undertakings' Results.

Conway.

After transferring to the relief of rates the sum of £3,965 in respect of past deficiencies, the Conway Corporation Gas Department has for the third year in succession made a net profit, amounting this year to £275, which, added to a surplus brought forward, leaves a total surplus of £1,018.

Elgin.

The Engineer and Manager of the Elgin Corporation Gas Department (Mr. Peter Low), in his Report to the Council, stated that the output of gas for the month ended Nov. 15, 1934, was 11,577,500 c.ft.—an increase of 1,472,900 c.ft., or 11·45%, over last year. The half-yearly report stated that the output of gas was 48,577,900 c.ft.—an increase of 4,921,400 c.ft., or 11·13%. The last figures represent an increase of 20,680,800 c.ft., or 74·13%, in five years.

Bilston.

The profit and loss account of the Bilston Gas Light and Coke Company for the year ended Sept. 30, 1934, showed that after paying the interim dividends there remained a credit balance of £7,964. It is proposed to pay on Jan. 7 further dividends of 5s. 6d. per share on the "A" shares and 4s. per share on the "B" shares, both less tax, making, with the interim dividends paid in July last, 11s. and 8s. per share respectively. This left a balance of £5,884. The report states that the new carbonizing plant is rapidly approaching completion, and the Directors feel confident that the result of its working will justify the large outlay involved. To provide funds for this expenditure the Directors have decided to offer for sale by auction at an early date so many of the Company's unissued "B" shares as will produce the sum of £6,676. Due notice of this sale will be given to the shareholders.

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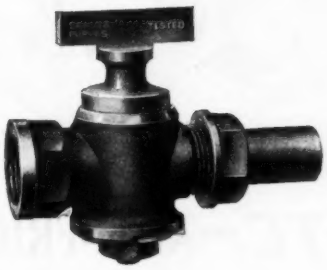

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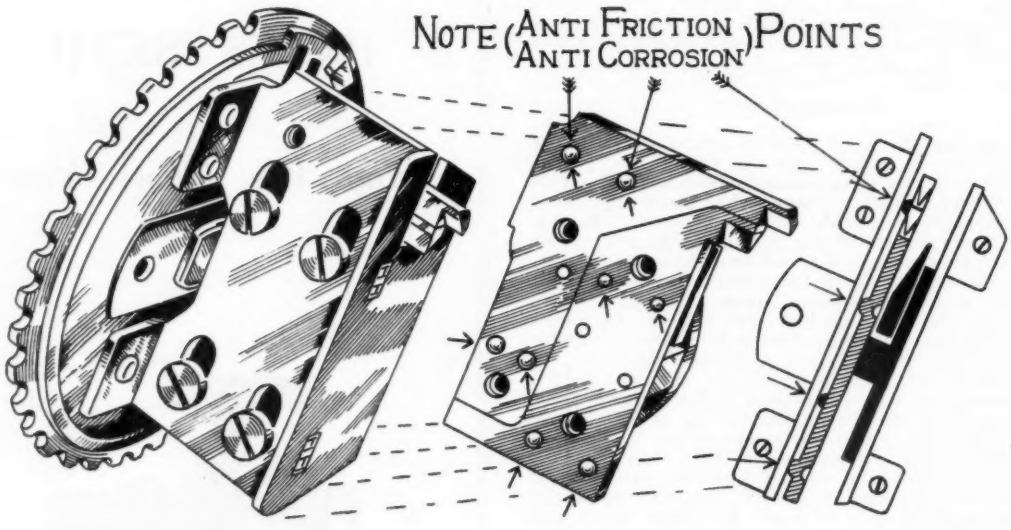

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Gas Markets and Manufactures

Stock Market Report.

[For Stock and Share List, see later page.]

The Stock Exchange opened the New Year on Wednesday last in buoyant fashion, which continued right up to the close of the three-week account on Friday. Some large buying of gilt-edged stocks was reported and prices again hardened; 2½% Consols finishing at 93⅛, the highest price attained since the rate was reduced in 1903. The Industrial market was also active, many shares showing improvement, particularly Courtaulds, Dunlops, and the shares of those companies connected with the building industry. Barclays, Lloyds, and Martins banks issued statements during the week, and all showed increased profits, while dividends are maintained at the 1933 rates. There was a large over-subscription to the South African Conversion loan, and the acceptances of conversion by holders were so heavy that only a very small percentage was available for cash applicants; dealings closed at about 1¼ premium. The London County Council also announced a conversion offer, and are issuing £10,000,000 2¾% stock at par, redeemable 1960/70, to take the place of the existing 3½% stock which is to be redeemed on Jan. 5, 1936.

The Gas Market was well supported, and during the four days of business an appreciable volume of transactions was recorded, especially in Imperial Continental stock, the price narrowing to a five-point margin at 218½, resulting in a net gain of 1½. Other increases included a rise of 3 in Tottenham 5½% preference to 135½, and a gain of 2 in Oriental ordinary and Portsmouth 5% maximum to 170½ and 114½ respectively.

With the yield on British Government stocks becoming less almost daily, the small rentier who has to live on his income can ill afford to indulge in these safety-first luxuries and must turn elsewhere for a more remunerative outlet. For this reason investors in increasing numbers have been using the Gas Market for the first time as a good second-line defence, for at current prices a return of from 3½ to 3¾% is obtainable on many of the leading permanent debenture stocks, excepting of course those of the Gas Light and South Metropolitan Companies, in which cases the yield is only a little over 3%, while as regards ordinary stocks, the yields obtainable on those of the larger undertakings vary from 4 to 4¼%. Under the circumstances therefore it is not unlikely that the values of these stocks will in the near future show still further improvement, subject, of course, in the case of ordinary stock to the maintenance of 1933 dividends.

Current Sales of Gas Products.

The London Market for Tar Products.

LONDON, *Jan.* 7.

There is little change to report in the prices of tar products, which are as follows:

Pitch, 46s. to 48s. per ton f.o.b.

Creosote is not less than 5d.

Refined tar, 4d. to 4¼d. per gallon in bulk at makers' works.

Pure toluole, about 2s. 2d.; pure benzole, 1s. 9d. to 1s. 10d.; 95/160 solvent naphtha, 1s. 7d.; and 90/160 pyridine, 6s. 3d. to 6s. 6d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Jan. 7.

The average prices of gas-works products during the week were: Gas-works tar, 21s. 6d. to 26s. 6d. Pitch—East Coast, 47s. 6d. to 50s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 47s. 6d. to 50s.* Toluole, naked, North, 1s. 6d. to 1s. 8d. Coal-tar crude naphtha, in bulk, North, 6½d. to 6¾d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4½d. Heavy naphtha, North, 9¾d. to 10¾d. Creosote, *ex* works, in bulk, North, liquid and salty, 3½d. to 3¾d.; low gravity, 3½d. to 3¾d.; Scotland, 3¾d. to 3¾d. Heavy oils, in bulk, North, 3¾d. to 4¼d. Carbolic acid, 60's, 1s. 8d. to 1s. 9d. Naphthalene, £10 to £11. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Jan.* 5.

Quotations remain steady in most departments, although there is not much new business being placed.

Crude gas-works tar.—Actual value is 29s. to 31s. per ton *ex* works in bulk.

Pitch.—Conditions are quiet with value unchanged at 43s. to 44s. per ton, f.o.b. Glasgow for export and 42s. 6d. per ton f.o.r. works in bulk for home trade.

Refined tar—Quotations remain at 3d. to 3¼d. per gallon, f.o.r. naked.

Creosote oil.—The position remains unchanged with prices steady. B.E.S.A. Specification, 3¾d. to 4d. per gallon; low gravity, 4¼d. to 4½d. per gallon; and neutral oil, 4d. to 4¼d. per gallon; all f.o.r. in bulk.

Cresylic acid.—The volume of new business is disappointing. Pale, 97/99%, is 1s. 2½d. to 1s. 3½d. per gallon; dark, 97/99%, 1s. 0½d. to 1s. 1½d. per gallon; and pale, 99/100%, 1s. 4d. to 1s. 5d. per gallon—all *ex* works.

Crude naphtha is easier at round 4d. to 4½d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 3d. to 1s. 4d. per gallon and 90/190 heavy is about 9d. per gallon.

Motor benzole is valued at 1s. 3d. to 1s. 4d. per gallon.

Pyridine.—90/160 grade is 6s. to 6s. 6d. per gallon, and 90/140 grade 6s. 6d. to 7s. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	9	to	0	9½	per gallon at works
Motor ,,	1	3½	,,	1	4	,, ,, ,,
90% ,,	1	4	,,	1	4½	,, ,, ,,
Pure ,,	1	7½	,,	1	8	,, ,, ,,

Contracts Advertised To-Day.

Burners.
Glasgow Gas Department. [p. 104.]

Globes.
Glasgow Gas Department. [p. 104.]

Mantles, &c.
Glasgow Gas Department. [p. 104.]

Trade Notes.

Chelmsford Gas-Works Extensions.

Messrs. Edwin Danks, Ltd., Farringdon Street, London, are to be the contractors for new boiler settings and other work at Chelmsford Gas-Works.

Washing Machine Demonstrations.

The Economic Gas Boiler Company, Ltd., of Burnley, announce that they are prepared to give demonstrations of their "Economic" gas washing machines for any gas undertakings who care to communicate with them.

Amal, Ltd.

Messrs. Amal, Ltd., Holford Works, Perry Bar, Birmingham, have published two interesting lists, one dealing with accurately calibrated gas injector and burner nipples, for street lamps, industrial appliances, cookers, and fires, &c., and the other with their new laboratory bunsen burner.

Up-to-Date Gasfitters' Kits.

A leaflet recently published by Messrs. Abbott, Birks, & Co., of Blackfriars Road, S.E. 1, represents the work of this firm carried out over a period of four years. The tools and equipment shown have been selected from the kits of a large number of progressive gas undertakings, and the makers believe that it represents the first attempt to embody complete modern fitters' and plumbers' kits on one page.

Hotel Gas Meters.

A pamphlet which United Gas Industries, Ltd., of Stannary Street, S.E. 11, are issuing to gas undertakings is an effort to popularize the use of gas fires in hotel bedrooms. This describes a small 1d. or 6d. in the slot meter set in a suitable cabinet, with a set-to-zero prepayment mechanism which ensures positive valve closing without strain—and therefore quick opening even at the lowest setting. It is particularly simple to operate.

"Unita" Gas Cookers.

We have received from the Parkinson Stove Company, Ltd., Stechford, Birmingham, 9, a copy of their recently published leaflet giving some particulars of the "Unita" series of gas cookers which are intended for use in catering establishments. The series has been evolved to meet varying requirements and each unit has been designed so that grouping side by side to form ranges to suit individual catering requirements can easily be carried out. The outside ovens only, however, can be fitted with the "Adjusto" Heat control. The hotplate burners have been designed for heavy duty and varying hotplate requirements are met by a choice of four patterns.

A year of progress for West's carbonizing and fuel-handling systems . . .

During 1934 installations of Glover-West vertical retorts have been put into commission at Lurgan, Ireland (a second and a third installation), Worcester, Macclesfield (third contract), East Hull, Hawick, Scotland, Roskilde, Denmark (second contract), and Leicester (Belgrave Gate gasworks), and an installation of West-vertical carbonizing chambers is in operation at Tilburg, Holland.

New contracts for Glover-West vertical retort installations, with their nominal daily gas-making capacities, are as follows:—Bilston (1,080,000 c. ft.); Falkirk (second contract—720,000 c. ft.); Leicester (sixth contract—2,400,000 c. ft.); Leven, Scotland (second contract—240,000 c. ft.); Limerick (second contract—150,000 c. ft.); Llanelly (720,000 c. ft.); Manchester (Rochdale Road gasworks—2,880,000 c. ft.); Southend-on-Sea (Gas Light and Coke Company—4,000,000 c. ft.); St. Helens (fourth contract—3,240,000 c. ft.); Stratford-on-Avon (720,000 c. ft.); Johannesburg, S. Africa (second contract—1,350,000 c. ft.); Bourg-en-Bresse, France (480,000 c. ft.); Vannes, France (second contract—240,000 c. ft.); Roskilde, Denmark (second contract—150,000 c. ft.); Reus, Spain (375,000 c. ft.); and Santiago, Chile (third contract—1,920,000 c. ft.).

Installations of Westvertical carbonizing chambers are in hand for the gas undertakings of St. Albans (nearly four million c. ft. per day); Willenhall (600,000 c. ft. per day); and North Shore, Sydney, N.S.W. (nearly three million c. ft. per day).

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Issue. £	Share.	When ex-Dividend.	Dividends. Prev. Hf.-Yr. % p.a.	Dividends. Last Hf.-Yr. % p.a.	NAME.	Quotations. Jan. 4.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
1,551,868	Stk.	Sept. 10	7	7	Alliance & Dublin Ord. ...	135—145	...	137½—138
374,000	"	Dec. 17	4	4	Do. 4 p.c. Deb. ...	90—100*	...	...
557,655	"	Aug. 13	7	7	Barnet Ord. 7 p.c.	168—173	...	...
300,000	1	Oct. 8	1/9⅔	1/4⅔	Bombay, Ltd.	1⅝—1⅞	...	30/—31/9
178,480	Stk.	Aug. 13	9½	9½	Bournemouth sliding scale	227—237	...	...
550,050	"	"	7	7	Do. 7 p.c. max. ...	170—175	...	172
439,160	"	"	6	6	Do. 6 p.c. Pref. ...	150—155	...	...
50,000	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	86—91*	...	...
262,025	"	"	4	4	Do. 4 p.c. Deb. ...	105—110*	...	109
335,000	"	"	5	5	Do. 5 p.c. Deb. ...	125—130*	...	...
357,900	"	Aug. 13	7½	7½	Brighton, &c., 6 p.c. Con. ...	175—185	...	...
540,000	"	"	6½	6½	Do. 5 p.c. Con. ...	158—163	...	160
195,500	"	"	6	6	Do. 6 p.c. B. Pref.	145—150	...	...
1,487,500	"	July 9	5	5	Bristol 5 p.c. max.	120—122*a*	...	...
120,420	"	Dec. 17	4	4	Do. 1st 4 p.c. Deb. ...	102—104*a**	...	...
217,870	"	"	4	4	Do. 2nd 4 p.c. Deb. ...	102—104*a**	...	...
338,790	"	"	5	5	Do. 5 p.c. Deb.	122—124*a*	...	...
855,000	"	Sept. 24	8	7	British Ord.	174—179	...	176—178½
100,000	"	Dec. 17	7	7	Do. 7 p.c. Pref.	155—160*	...	...
120,000	"	"	4	4	Do. 4 p.c. Red. Deb. ...	97—102*	...	98
450,000	"	"	5	5	Do. 5 p.c. Red. Deb. ...	108—113*	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	2—4	...	...
100,000	10	Nov. 6	4½	4½	Do. 4½ p.c. Pref. ...	4—6	...	...
150,000	Stk.	Dec. 17	4½	4½	Do. 4½ p.c. Deb. ...	90—95*	...	93
626,860	"	July 23	6	6	Cardiff Con. Ord.	135—140	...	...
287,860	"	Dec 17	5	5	Do. 5 p.c. Red. Deb.	105—110*	...	...
157,150	"	July 23	5½	5	Chester 5 p.c. Ord.	113—118*b*	...	...
98,986	1	Sept. 24	2/-	2/-	Colombo, Ltd. Ord.	1⅞—1⅞	...	...
24,500	1	"	1/4½	1/4½	Do. 7 p.c. Pref. ...	19/6—21/6	...	...
609,204	1	Sept. 24	/11'48	/11'48	Colonial Gas Assn. Ltd. Ord.	19/6—21/6	...	...
296,058	1	"	1/8'30	1/8'30	Do. 8 p.c. Pref.	24/6—26/6	...	...
1,775,005	Stk.	July 23	6½	5	Commercial Ord.	122—127	...	126½
475,000	"	Dec. 3	3	3	Do. 3 p.c. Deb. ...	87—91*	...	...
286,344	"	Aug. 13	5	5	Do. 5 p.c. Deb. ...	125—130	...	128¾
807,560	"	Aug. 13	7	7	Croydon sliding scale ...	165—170	...	118
569,590	"	"	5	5	Do. max. div.	116—121	...	...
620,385	"	Dec. 17	5	5	Do. 5 p.c. Deb.... ...	123—128*	...	...
542,270	"	Aug. 13	10	7	Derby Con.	195—205*e*	...	...
55,000	"	Dec. 17	4	4	Do. 4 p.c. Deb.	100—105*e**	...	...
209,000	"	Aug. 13	5	5	East Hull Ord. 5 p.c. ...	113—118	...	...
181,625	"	Aug. 13	6	6	East Surrey Ord. 5 p.c. ...	140—145	...	...
175,609	"	Dec. 17	5	5	Do. 5 p.c. Deb. ...	123—128*	...	...
1,002,180	"	Sept. 10	†7	†5	European, Ltd.	120—125	...	120—122
19,313,481	"	Aug. 13	5⅝	5⅝	Gas Light & Coke 4 p.c. Ord.	27/9—28/9*f*	...	27/—28/3
2,600,000	"	"	3½	3½	Do. 3½ p.c. max. ...	93—97	...	95½—96¼
4,477,106	"	"	4	4	Do. 4 p.c. Con. Pref. ...	109—112	...	109½—111
6,102,497	"	Dec. 3	3	3	Do. 3 p.c. Con. Deb. ...	89—92	...	90½—91½
3,642,770	"	"	5	5	Do. 5 p.c. Red. Deb. ...	118—121	...	119½
3,500,000	"	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	116—119	...	117½—118½
270,466	"	Aug. 13	6	6	Harrogate New Cons. ...	140—145	...	...
140,000	1	Sept. 24	1/7½	1/7½	Hongkong & China, Ltd. ...	18—18½	...	...
218,200	Stk.	Aug. 13	6	6	Hornsey Con. 3½ p.c. ...	137—142	...	...
5,500,000	"	Oct. 22	†4	†0	Imperial Continental Cap.	216—221	+1½	216—219½
223,130	"	July 23	3½	3½	Do. 3½ p.c. Red. Deb.	92—97	...	...
235,242	"	Aug. 13	8½	8½	Lea Bridge 5 p.c. Ord. ...	190—200	...	...
2,167,410	"	Aug. 13	6	6	Liverpool 5 p.c. Ord. ...	144½—145½*b*	+1½	...
245,500	"	Dec. 17	5	5	Do 5 p.c. Red. Pref. ...	105—110*b**	...	...
806,088	"	July 16	4	4	Do. 4 p.c. Deb. ...	104—107*b*	...	...
11,751	"	Aug. 27	10	8	Maidstone 5 p.c. Cap. ..	188—198	...	...
63,480	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	83—88*	...	...
75,000	"	Dec. 3	†10	†10	Malta & Mediterranean ...	200—210	...	...
322,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb. ...	100—108	...	...
231,978	Stk.	Aug. 13	5	5	M. S. Utility "C." Cons. ...	115—120	...	...
818,657	"	"	4	4	Do. 4 p.c. Cons. Pref.	101—106	...	...
360,075	"	Dec. 17	4	4	Do. 4 p.c. Deb. ...	102—107*	...	...
148,955	"	"	5	†5	Do. 5 p.c. Deb. ...	125—130*	...	127½
125,000	—	Jan. 2	11/8	3½	Do 3½ p.c. Rd. Rg.Bds.	98—101*	−1	...
675,000	"	May 98	†6	††3	Montevideo, Ltd.	55—65	...	...
2,061,315	"	Aug. 13	5½	5	Newcastle & Gateshead Con.	26/6—27/-*d**	...	...
682,886	"	"	4	4	Do. 4 p.c. Pref. ...	105—107*d*	...	...
776,706	"	Dec. 17	3½	3½	Do. 3½ p.c. Deb. ...	98½—100½*d*	...	...
277,285	"	Oct. 8	5	5	Do. 5 p.c. Deb. '43 ...	105—107*d*	...	...
274,000	"	Aug. 13	5	5	Newport (Mon.) 5 p.c. max.	110—112*a*	...	...
204,940	"	Aug. 13	7½	7½	North Middlesex 6 p.c. Con.	170—175	...	...
396,150	"	Aug. 13	5	5	Northampton 5 p.c. max. ...	107—112	...	...
300,000	"	Nov. 5	†7	†9	Oriental, Ltd.	168—173	+2	170
416,617	"	Dec. 17	8	8	Plym'th & Stonehouse 5 p.c.	180—185*	...	...
504,416	"	Aug 13	8	8	Portsm'th Con. Stk. 4 p.c. Std	185—188	+1	184½
241,446	"	"	5	5	Do. 5 p.c. max. ...	112—117	+2	112
114,000	"	July 23	5	5	Preston 5 p.c. Pref.	110—115	...	...
1,736,968	Stk.	Aug. 27	6	6	Sheffield Cons.	147—149*e*	...	...
95,000	"	July 9	4	4	Do. 4 p.c. Deb.	100—104*e*	...	...
133,201	"	Aug. 13	5	8½	Shrewsbury 5 p.c. Ord. ...	154—159	...	157
90,000	10	May 28	‡4	‡3	South African	3—4	...	...
927,177	1	Sep. 10	1/2⅔	1/2⅔	South East'n Gas Cn. Ld Ord	30/6—32/6	...	...
786,061	1	"	-/10½	-/10½	Do. 4½ p.c. Red.Cum.Pref	22/6—23/6	...	23/-—23/4½
450,000	Stk.	Aug. 13	74/4	4	Do. 4 p.c. Red. Deb. ...	102—105	...	...
6,709,895	"	Aug. 13	7	5	South Met. Ord.	147—150	...	147½—148½
1,135,812	"	"	6	6	Do. 6 p.c. Irred. Pf.	150—153	...	151—153
850,000	"	"	4	4	Do. 4 p.c. Irred. Pf.	107—110	...	...
1,895,445	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	89—92*	...	...
1 000,000	"	July 9	5	5	Do. 5 p.c. Red. Deb.	117—121	...	120½—121
209,810	"	Aug. 13	8½	8½	South Shields Con.	186—188*d*	...	...
1,548,795	"	July 9	6	6	South Suburban Ord. 5 p.c.	144—149	...	148—148½
512,825	"	"	5	5	Do. 5 p.c. Pref.	124—129	...	...
300,000	"	"	4	4	Do. 4 p.c. Pref.	105—110	...	...
868,887	"	Dec. 17	5	5	Do. 5 p.c. Deb.	125—130*	...	127
100,000	"	"	4	4	Do. 4 p.c. Deb.	107—112*	...	...
647,740	"	Aug. 13	5	5	Southampt'n Ord. 5 p.c. max.	118—123	...	...
121,275	"	Dec. 17	4	4	Do. 4 p.c. Deb.	102—107*	...	102½—103
350,000	"	Aug. 13	5½	5½	Swansea 5½ p.c. Red. Pref.	114—119	...	118½
200,000	"	Dec. 17	6½	6½	Do. 6½ p.c. Red. Deb.	100—105*	...	...
1,076,490	"	Aug. 13	6½	6½	Tottenham and District Ord.	163—168	...	165
409,836	"	"	5½	5½	Do. 5½ p.c. Pref. ...	133—138	+3	136
62,235	"	"	5	5	Do. 5 p.c. Pref. ...	122—127	...	...
199,005	"	Dec. 3	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
349,110	"	Aug. 13	7	7	Uxbridge, &c., 5 p.c. ...	165—170	...	...
88,890	"	"	5	5	Do. 5 p.c. Pref. ...	124—129	...	126
1,326,700	"	Aug. 13	7	7	Wandsworth Consolidated	168—173	...	170—171½
1,371,378	"	"	5	5	Do. 5 p.c. Pref.	126—131	...	...
1,317,964	"	Dec. 17	5	5	Do. 5 p.c. Deb.	130—135*	...	136
208,300	"	"	...	26/8	Do. 4 p.c. Deb.	104—109*	...	...
158,400	"	Aug. 13	6*g*	5	Winchester W. & G. 5 p.c. Con.	120—125	...	...

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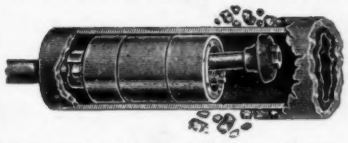

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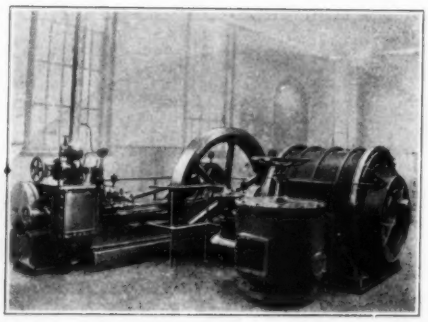

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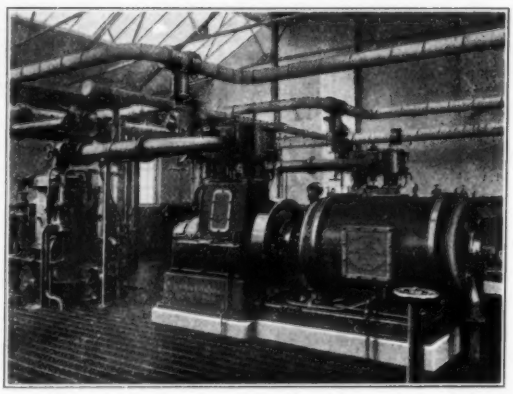

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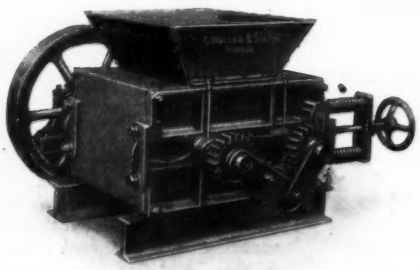

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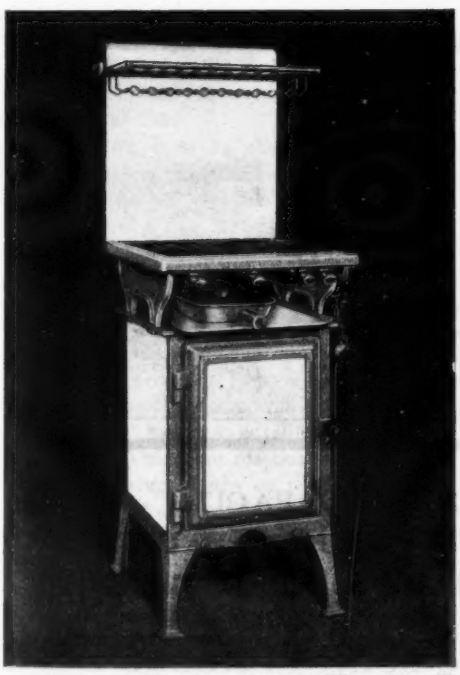

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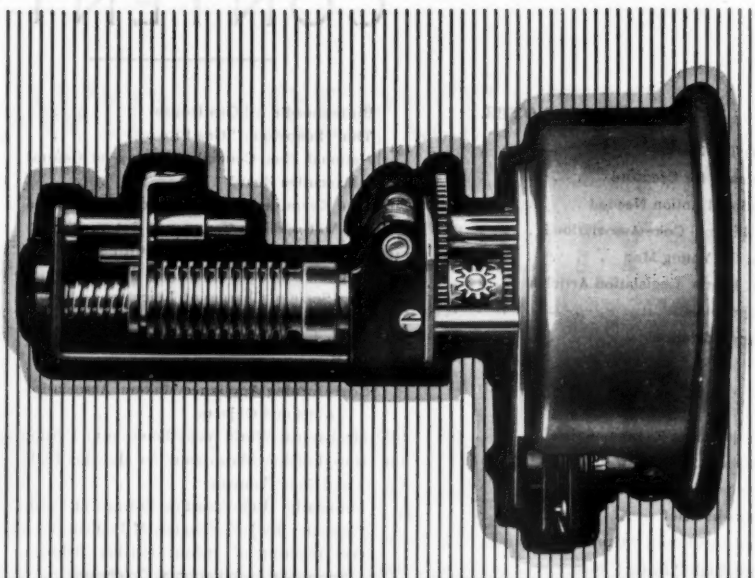

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Gas Journal

JANUARY 16, 1935

Vol. 209. 87th Year No. 3739.

Editorial Notes

The Tar Market

In the "JOURNAL" for Jan. 2 we warned the Gas Industry that if it fails to take account of the work being carried out on the hydrogenation of tar and tar distillates it will miss a very excellent boat. It is no exaggeration to say that it took our Industry more than a century to awaken to the importance of the coke market—an almost incredible neglect of 60% of the products of the carbonizing process. Even to-day there is not universal recognition that unless we prepare good coke and couple with this efficient marketing organization the price of gas will rise.

But when we turn to the liquid bye-products, tar and its distillates, we find no general appreciation of their worth. As we said on Jan. 2, our Industry is a large producer of a raw material for motor spirit, and the present prices it obtains for this raw material must not be regarded as a criterion of its true worth. It is less than a year ago that Sir David Milne-Watson, addressing shareholders of the Gas Light and Coke Company, expressed regret at the weakening of the creosote market. The past year, however, showed a steady appreciation of this market, and the material at present is passing out of the producers' hands as rapidly as it is made. Prices are very firm. There are reasons for this.

In the high-temperature carbonization process about 5% of the weight of coal is recovered as tar—a figure increased to about 10% in the low-temperature process. Perhaps it is the comparatively small percentage yield which accounts for the insufficient attention given to the marketing of tar and its distillates. We say this while bearing in mind the extraordinarily good work which has been and is being done by the British Road Tar Association. In 1933 772,300 tons were used for road tar in England and Wales, and this figure would not have been reached but for the activities of the B.R.T.A. Last year the road tar sales showed a slight decrease, attributable largely to the economy campaign of the Road Authorities, but also to improved quality of tar and better methods of application resulting in longer life of the tarred surfaces. During the year the selling price of creosote hardened from 3d. to 4½d. a gallon. This figure of 4½d. compares with a price of about 5½d. a gallon received for road tar. In our opinion creosote should fetch more than road tar; and we believe that, if the Gas Industry watches its paces, this object can be achieved.

Demand for Creosote

We have said that there are reasons for the firm tone of the creosote market at the present moment. One is unquestionably the progress of hydrogenation. We are exporting British creosote to foreign countries for its conversion into motor spirit. This fact surely has significance. We are selling to buyers in this country for the self-same purpose. Again, oil from coal processes are being developed which depend essentially on the purchase of creosote. We do not say that success will attend these processes; we simply emphasize that the demand for gas-works creosote is increasing. Then there is the use of creosote as a fuel for the internal combustion engine. As explained by Mr. H. M. Spiers and Dr. E. W. Smith in their Report to the Institution of Gas Engineers presented at the Research Meeting last November, the measure of success obtained in the use of tar oil fuels as a substitute for petrol in mobile spark ignition engines has been but partial, though much experience has been gained which may pave the way to ultimate success. In stationary engines of the spark ignition type results are much more promising. As far as the Diesel engine is concerned, the addition of dopes to tar oils may overcome drawbacks to their use, though this may prove commercially unattractive due to the added cost. The point to bear in mind, however, is that the Diesel engine industry in this country has grown considerably, and that the Diesel industry is carrying out much research. And whenever such work is undertaken one may be fairly sure that it will not be in vain.

Our contention is plain enough. If the developments we envisage come to pass as rapidly as is anticipated, the demand for tar and its distillates may shortly be in excess of the supply. Is the Gas Industry going to benefit from this likely favourable circumstance? It will certainly not benefit if it enters into long-term contracts

for creosote at prevailing prices. The policy it should pursue ought to be short-term contracts and a watchful eye on the many developments which are at the moment taking place in this country and abroad. *The Industry must look ahead, not sell ahead.*

National Action Needed

We have emphasized—a fortnight ago and again to-day—the importance in our view of this whole question of the disposal of tar and its distillates, because we believe it to be a matter which will have considerable significance in the coming decade—a period which is likely to have a critical bearing on the future of our Industry.

We feel that in a matter such as this the larger undertakings, which in themselves constitute powerful units, are perhaps well able to look after their own interests. But the general welfare of the Industry, as has many times been pointed out in other connections, is dependent upon the well-being of many smaller units as well, and upon the capacity of the whole front to withstand the intense competition which it will be called upon to meet. We therefore go so far as to say that the tar disposal question is one which demands, at the present moment, *national* attention by the Gas Industry. We have nothing but admiration for the work which is being done by the British Road Tar Association, but this body covers part only of the field of utilization and marketing, and we suggest very early consideration as to whether there is not need for a British Tar Association.

To whom, then, should such a suggestion be made at the present time? It is not purely a technical matter; it is not solely commercial; it does not alone concern propaganda; but there would seem scope for action on all these counts. Is this a case in which the British Gas Federation would consider initiating action? We ask the question in all humility, but with the assurance in our own mind that there is opportunity here for action which would "further the interest and welfare of the Gas Industry."

A National Coke Association?

An excellent move has been made by the London and Counties Coke Association which should receive the full measure of support it merits. The Association has decided to accept gas undertakings in the provinces outside its area as affiliated members of the Association, and we strongly advise gas undertakings to take advantage of the scheme. The Association has a splendid record of work accomplished, and is efficiently organized to offer a great deal of valuable service and advice. Only a few weeks ago we recorded that the gas undertakings comprising membership of the London and Counties Coke Association have expended in the last three years a total of £1,500,000 on coke-grading plant designed almost solely for the production of coke of improved quality and of the various grades required. During the same period they have expended more than £80,000 in advertising domestic coke-burning appliances. Again, the present yearly rate of installation of coke-burning grates by two London gas companies alone is more than 14,000. Even so, more work of an educational and propaganda character needs to be carried out to break down prejudice and make the public fully aware of the merits of gas coke as sold to-day. In this regard the new scheme of the Association should help enormously. Affiliated membership entitles undertakings to receive all technical information and advertising material, and advice from the technical staff for specific work.

For the Young Man

Some very sound advice to young men in the Industry is offered by Mr. Stephen Lacey, in his Address to the Scottish Juniors, which we publish to-day. The Gas Industry, probably more than any other, calls for men with personality and above all versatility. Modern scientific training becomes more and more specialized and, as a result, tends to produce the specialist rather than the all-rounder. Our age, of course, is pre-eminently the age of the specialist, but this specialization is often obtained at the expense of what we consider the more vital qualities—broadmindedness, tolerance, and above all a true realization of the human factor in industry. This danger of our present-day education is apparent in all branches of scientific training, but it is of vital importance to the Gas Industry that the young men should realize the shortcomings of their technical training.

The Industry requires skilled engineers, but, since it is impossible in small undertakings to divorce the engineering and sales sides, a young man who is an excellent engineer is not giving his full value to the Industry unless he has acquired that wider outlook which is not obtained by close concentration on technical details. The student must not allow a mass of formulæ to obscure the horizon until he becomes little better than a cog in the machines he understands so well. He must cultivate a keen interest in current affairs, in the commercial side of the Industry, and in the sales methods employed by competitors.

The psychological effect of sales methods on different classes of the community is not a subject which can be studied by means of a text book—and it is really doubtful if it is studied at all. The successful salesman is usually said to be successful because he has what is known as a flair for selling. This so-called flair for selling seems to be the ability to sum up, consciously or subconsciously, prospective customers and to use the correct line of sales talk. Others will call successful selling an application of commonsense and will, in fact, assert that good commercial ability is merely a manifestation of the self-same commonsense. And that, we would venture to suggest, is why the scientific expert is rarely a good business man. Commonsense does not come from a close study of books, and we would like to endorse Mr. Lacey's view that the young men of the Industry should be good engineers and, at the same time, "men of the world."

Mr. Evetts' Legislation Articles

By general consent, one of the features of the Technical Press last year was the series of "Journal" articles by Mr. George Evetts summarizing the position of legislation to date as it affects the Gas Industry. We have now reprinted the articles in book form, with the addition of an index and marginal annotations which greatly facilitate reference and indicate at a glance the ruling.

The inquiries, as soon as the articles started in the "Journal," as to whether they would be re-printed came from such varied quarters that we believe the resultant small book will fill a very useful place in the Industry's bookshelves, and it appears that Company Directors and Secretaries, Officers of Municipalities, and many others are anxious to possess copies.

Modestly, in a foreword to the book, Mr. Evetts excuses deficiencies which he sees in his work on the score of the limitations imposed by the very nature of short articles, in which form he set out to review the situation. We think the Industry will not find many deficiencies, but will feel grateful to the author for having sum-

marized the legislative position in a form so handy for quick reference, and quite possibly of more general utility than a volume many times as thick.

Monopolies

SEEMINGLY there is always a lurking prejudice against monopolies and monopolists, though their activities are so frequently beneficent in the long run, if not immediately, and the terms themselves usually have stricter limitations than is suggested by them. Take, for example, the public utility services of gas, electricity, and water. The last named comes closest to being a monopoly, for there is no substitute, and it is not every consumer who is in a position to sink his own well. As for the other two, however, one has a monopoly of gas and the other of electricity (though here, again, we know the exceptions), but neither has a monopoly of light, heat, or power. And as to the beneficence of such restricted monopoly as may exist? Well, would anyone venture to argue that eventually consumers can benefit by the existence of competitive sets of pipes and cables in the street? History will assist one in forming a judgment.

Dealing a few days ago with public service monopolies, a newspaper leader writer introduced the familiar argument that " when a man believes that his butcher is charging him too much for beef, his remedy is simple; he can change his butcher. But when it is water, gas, or electric current that a householder is buying the position is different." Exactly—the position is different, but it is different for the seller as well as for the buyer. Butchers have been known to move from one locality to a better; it is hard to visualize a gas or water company doing the same thing—they are fixtures, for better or for worse. Some security of position thus becomes essential, if an efficient service is to be afforded. This security takes the form of a sole right to supply, not a class of commodities, but a commodity. Also, in the interests of the consumers, the powers of charge are closely circumscribed, and quality is safeguarded. Most people, at one time or another, experience a wider variation in the quality of the meat supplied to them than they do in that of their gas or water.

We have nothing to say against the butcher, who performs a necessary, and not invariably pleasant, duty in a satisfactory manner, but at least equally satisfactory is the service rendered by the public utility undertakings. All are benefactors to the community; and in so far as it is a monopoly that permits of these benefactions, the words " monopoly " and " monopolists " should appeal rather than repel. Let this note be regarded as a plea for a more kindly frame of mind towards them.

Standardization

THERE was a time when people on this side of the Atlantic were apt to rail at the prevailing tendency of the buildings in North America to soar skywards—a tendency rendered possible by the nature of the foundations upon which they rest—but, after all, is this so much more than spreading out sideways, in a threat to cover the land? In this country, houses are now being talked of in hundreds of thousands, or even millions, while motor-cars are regarded in much the same proportions. Where, soon, will the pedestrian tread? That is not all. There is mass production in the minds of everybody —mass production of vehicles, and mass production of dwellings. This, of course, is an attitude which may be counted for good, inasmuch as mass production is a potent slimmer of costs; but some there are who will sigh, in vain, for that change and variety which can take so big a portion of the greyness out of life.

However, circumstances being as they are, cost must remain a prime consideration to the vast majority of people and schemes, and therefore what makes for an extension of standardization is to be welcomed. It was having this consideration in mind that we read with interest in *The Times* a few days ago a letter embodying the suggestion that for small houses essential units wherein all the expensive details of plumbing, drainage, hot and cold water services, gas, electricity, &c., are included (all of which may now be placed inside the building), and which consist of the kitchen, bathroom, and lavatory, usually planned one above the other, " could be mass produced in a factory in skeleton and sent to any site anywhere in England, complete with piping and fittings, in a lorry or railway truck. The connections to the water, gas, and electricity mains could be screwed on in a few minutes, and drains connected." Even so, we could still hope for something of our cherished variety, because " the unit could be cased in brick, stone, or concrete, or any other material suitable to the neighbourhood, and the remainder added as fancy or purse decided." The writers of the letter believe that such a skeleton unit as they indicate, complete with all essential fittings, would occupy a space of approximately 12 ft. by 8 ft. by 6 ft.

This suggestion should not be lost sight of, in case there may be connected with it something in which the Gas Industry would be able to assist.

Forthcoming Engagements

January.

17.—S.B.G.I.—Council Meeting, 2.30 p.m.
18.—SOUTHERN ASSOCIATION (WESTERN DISTRICT).—Commercial Meeting, Rougemont Hotel, Exeter, 2.30 p.m.
19.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Sheffield. Paper by Dr. Fritz Gummert.
19.—WALES AND MONMOUTHSHIRE JUNIOR ASSOCIATION.—Meeting at Porthcawl. Paper by Mr. G. Thomas.
23.—B.C.G.A.—Manchester District Meeting, Manchester.
24.—B.C.G.A.—Yorkshire District Meeting, Leeds.
25.—B.C.G.A.—Northern District Meeting, Newcastle-on-Tyne.
25.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting and paper by Mr. S. F. Dunkley.
26.—WESTERN JUNIOR ASSOCIATION. — Visit to Gloucester.
31.—B.C.G.A.—South-Western District Meeting, Exeter.

GAS LEGISLATION

A Summary of the Position at the end of 1934

By George Evetts, M.Inst.C.E., M.Inst.Gas E., M.Inst.Cons.E.

The striking articles which Mr. Evetts contributed to the " JOURNAL " at the end of last year are now available in the form of a handy book, in similar style to the very popular annual " Technical Signpost " to the " JOURNAL." A general index and marginal annotations make reference easy, and from the many inquiries received while the articles were running, we believe the publication will find a very general welcome from Boards of Directors, Company Secretaries, Municipal Officers, and in many other quarters.

From the " JOURNAL " Office—
pp. 51, bound in cloth, 3s. 6d. net, postage 3d.
Six copies and over, post free.

Personal

With further reference to last week's announcement concerning the election of Mr. J. IVAN YATES as a Director of Radiation, Ltd., we are able to give some biographical details of Mr. Yates' career prior to his present appointment.

After coming down from Oxford he devoted the first twelve months of his business career to a study of accountancy with Messrs. Peat, Marwick, Mitchell, & Co., Chartered Accountants. He then went to the Essex Works, Birmingham, of John Wright & Co., Ltd., and there had practical experience in each section of the Works, in turn, commencing with the Drawing Office.

The valuable experience gained was further supplemented by a tour throughout the industrial centres of the United States, where he spent considerable time in different works learning the various methods of production. Mr. Yates has been a Director of Messrs. John Wright & Co., Ltd., for several years past and his energy and enthusiasm will be of value in his new appointment.

* * *

At a Meeting of the Directors of the Preston Gas Company held on Friday, Jan. 11, Mr. SAMUEL TAGG, J.P., M.Inst.C.E., Engineer and Manager, was elected a Director of the Company, together with Sir A. MEYRICK HOLLINS, Bart.

* * *

The appointment of Mr. CECIL H. BAMBER, B.Sc. (Assistant Engineer and Manager at the Bolton Corporation Gas-Works), as Gas Engineer and Manager to the Rochdale Corporation has been confirmed. Mr. Bamber is 39 years of age, and a native of Horwich, having been educated at the Rivington and Blackrod Grammar School and Manchester University, where he took the degree of B.Sc. with honours in chemistry. He begins his new duties on Feb. 1.

Obituary

Mr. CHARLES HENRY ARMSTRONG, who was, prior to 1924, for 30 years Secretary of the Walker and Wallsend Union Gas Company (now amalgamated with the Newcastle-upon-Tyne and Gateshead Gas Company), died at his home in Clifton Road, Newcastle, on Sunday, Jan. 13, after a brief illness. He was 72.

* * *

The death occurred last week of Mr. JAMES EDWIN BUTLER, aged 53, Distribution Superintendent of the Rugby Gas Company. Mr. Butler, who took up his position with the Company when he came to Rugby from Long Eaton in 1914, was a keen worker for the social welfare of the employees of the Company and was a prime mover in the foundation of the Social and Sports Club, of which he was Hon Treasurer at the time of his death.

* * *

The death recently occurred in Madrid at the age of 72 years of Don EMILIO COLOMINA, who for a long time was associated with the Madrid Gas Undertaking and who was responsible for the installation of pressure gas lighting in some of the public thoroughfares of that city.

News In Brief

Applications are Invited for the position of Distribution Superintendent of the Rugby Gas Company. This post carries a salary of £260 per annum.

New Showrooms have recently been opened by the Canterbury Gas and Water Company in Sun Street. The premises are centrally situated and are floodlighted by night.

An Increase of 1,500 c.ft. in the make of gas for December compared with the corresponding figures for last year was reported at a meeting of Dunbar Town Council last week.

An Interim Dividend has been declared by the Directors of Associated Gas and Water Undertakings, Ltd., at the rate of 5% per annum for the period to Dec. 31, on the ordinary shares—payable on Jan. 18.

A Three-Day Demonstration of gas cooking was held last week by the Cumnock Town Council. The demonstrations, which were carried out by Miss G. L. Hughes, of Melbourne, Australia, were well attended.

The Consumption of Gas at North Berwick for December last is reported by the Engineer and Manager, Mr. R. J. Philp, to have reached 3,546,000 c.ft., which is an increase of 42,000 c.ft. over the corresponding figures for 1933.

An Exhibition of appliances is being held by Boness Gas Light Company, Ltd., from Jan. 14 to 18. Miss Gillham, the well-known cookery expert, is to give demonstrations. The official opening ceremony was performed by ex-Provost Simpson.

The Twenty-Sixth Anniversary Dinner of the Illuminating Engineering Society will be held at the Trocadero Restaurant, London, at 7 p.m. on Feb. 5, with the President, Mr. H. Hepworth-Thompson in the chair. The Rt. Hon. William Ormsby-Gore, M.P. (First Commissioner of Works and Public Buildings), has accepted an invitation to be present. The dinner will be followed by dancing and a cabaret show.

The Belfast Gas Offices are to be changed from the City Hall to Ormeau Avenue, where the Corporation has just acquired the extensive offices and warehouse which formerly belonged to Messrs. Robert M'Bride & Co., Ltd., a linen firm that went into liquidation. In recent years the City Hall has become congested owing to expansion of work in various sections, notably the Gas Department. At present the Belfast Undertaking supplies over 108,000 consumers.

Freedom of Choice for their Tenants in the matter of gas or electric cookers is now being considered by the Ashford Urban Council Housing Committee. Up to the present dwellers in the Council's houses were compelled to use electricity; any change-over to gas being forbidden.

A Theatre for the showing of films dealing with the Gas Industry and other purposes is to be erected by the Liverpool Gas Company and, on Friday, Jan. 11, approval was given to the plans of the building by the Liverpool magistrates. The Company do not, of course, propose to make any charge for admission to see these films.

Breakfast by Candlelight—or no light at all—was the lot of many residents in the Winchmore Hill area of North London on Wednesday, Jan. 9, since the electric current failed for about half-an-hour shortly after 8 o'clock in the morning and darkness and fog added to the discomfort and inconvenience occasioned. The Northern Hospital at Winchmore Hill was among the buildings affected.

A Trade Supplement to the *Western Mail* for Jan. 7 contained an article by Mr. H. D. Madden, Engineer and Manager of the Cardiff Gas Light and Coke Company, entitled "Gas Industry Advances." In the course of his contribution, which provided gas with excellent publicity, Mr. Madden drew attention to the indirect assistance that coal mines, railways, and docks receive from the Industry.

"Gas Progress" is the name of the Annual Bulletin of the Bedford District Gas Company and Co-Partners' Journal, the first number of the second volume of which has just been published. This is a well-produced and interesting House Organ, and ably reviews the social activities of the Bedford Company during the past year. It is stated that a pension scheme for employees is now receiving consideration.

At the Annual General Meeting of the Household Appliances Section of the proposed National Household Appliances Propaganda and Advertising Week to be organized by the London Chamber of Commerce consideration was given to a proposal that a "Special Week" should be organized by the Section devoted to the sale, through the retail stores, of domestic appliances. The Meeting considered various methods by which this week could be instituted and organized, and eventually it was thought that when the dates had actually been decided that members should be left to arrange their own publicity and propaganda with the retailers. This method was favoured because of the varied nature of the household appliances trade.

The Montrose Gas Company have accepted the tender of West's Gas Improvement Company, Ltd., for an extension to the retort house and addition of four retorts with waste-heat boiler. The extension is necessary owing to the increase in gas consumption, as in 1921 when the existing verticals were installed the output was 54,000,000 c.ft. per annum and has now grown to 84,000,000 c.ft.

The Third of the Series of lectures to the outdoor staff of the Sheffield Gas Company was held at the chief showrooms, 15-17, High Street, on Friday, Jan. 11. On this occasion a lecture, illustrated by lantern slides, entitled "Radiant Heating of Rooms," was given by Dr. H. T. Angus, Chief Chemist of Messrs. Parkinson Stove Company, Ltd., Stechford, Birmingham. Over 50 employees of the Company attended and an excellent discussion followed the lecture.

Housing and Slum Clearance and the part gas can play therein is the subject of the current issue of "A Thousand and One Uses for Gas" just published by the B.C.G.A. The author states that it is useless to re-house the poorer classes without giving them heating and lighting at a price they can afford. Stress is also laid on the importance of proper ventilation for the small dwelling, and both the medical profession and architects are quoted as condemning the flueless house.

New Company Registrations during the year ended Dec. 31, 1934, are analyzed in the annual statistical report issued by Jordan & Sons, Ltd., Company Registration Agents, of Chancery Lane, W.C. 2. The total number registered was 446 public and 12,029 private companies, involving an aggregate capital of £143,540,406—a considerable increase over the figures of the previous year. Two gas concerns figure in the list of capitals of half-a-million pounds and over.

A Novel Note is struck by the complimentary calendar for 1935 which Messrs. Saml. Cutler & Sons, Ltd., are presenting at this season of the year to their many business friends. This calendar, which measures some 20 in. by 15 in., has a border comprising 23 photographic illustrations depicting many of this firm's more noteworthy gasholder installations, while in the middle, above the dates for the month, is an impression in colour of a section of a gas-works in sunk relief, showing in the centre an example of a modern gasholder complete with Cutler's triangulated guide framing.

The Illuminating Engineering Society.—In order to encourage students to take an interest in the important study of lighting, the Council of the Illuminating Engineering Society has decided to admit students of either sex between the ages of 16 and 25 as Affiliated Students of the Society for a specially reduced subscription of half-a-guinea a year. Affiliated Students will have the right to attend meetings, take part in visits, and receive the Society's monthly journal, *The Illuminating Engineer*. Forms of application for membership are obtainable from the Hon. Secretary, Mr. J. S. Dow, 32, Victoria Street, S.W. 1.

Stockport Lighting.—The Engineer and Manager of the Stockport Gas Department, Mr. T. Reynolds, suggested to his Committee that a charge of 1s. per 1,000 c.ft. should be made for the lighting of the Mersey Square. He stated that with a view to acquainting the Street Lighting Sub-Committee with the latest system of street lighting, he had, with the consent of the Chairman, invited the members of the Sub-Committee to inspect the Class A Lighting at Birmingham which had recently been installed. The Committee approved two schemes submitted by the Engineer, his suggestion regarding the charge to be made, and his invitation to the Street Lighting Sub-Committee.

Empire Exhibition in South Africa.—At a meeting of the Grand Council of the Federation of British Industries held on Jan. 9, the following resolution was passed: "The Grand Council of the Federation of British Industries welcomes the proposal to hold an Empire Exhibition in Johannesburg in 1936 and strongly recommends the scheme to British manufacturers." The Exhibition will include trade groups for heavy machinery, light machinery and hardware, and household accessories. In the United Kingdom the Exhibition will be represented by the Federation of British Industries, 21, Tothill Street, S.W. 1, who will be assisted by an advisory committee of gentlemen intimately connected with South African affairs.

The Public Lighting of Todmorden.—The Borough of Todmorden with a population of 22,222, has 45 miles of public thoroughfares lighted chiefly by gas; there being 820 gas lamps and 4 electric lamps. The aggregate illumination of the street lighting is 140,000 c.p.; gas accounting for 136,500 and electricity for 3,500 candles. Eight gas lamps have been erected during the past year. By way of improvement the fitting of reflectors to lamps in side streets has given the necessary increase in illumination where required without increasing the number of mantles. Lamps on main roads have been similarly treated with equally good results. Mr. F. V. Barnes, Engineer and Manager of the Gas Department, is responsible for the public lighting of the Borough.

New Institution "Grey Books."

The Institution of Gas Engineers has continued its series of "grey books," initiated at the 71st Annual General Meeting, by re-issuing the Reports presented and discussed at the 6th Autumn Research Meeting with their introduction, Discussion, Written Contributions, and Reply.

The Publications now issued, and of which copies can be obtained, price 2s. each, from the Secretary of the Institution, 28, Grosvenor Gardens, London, S.W. 1, are as follows:

Publication.

No. 100/9.—34th Report of the Joint Research Committee of the Institution and Leeds University. Corrosion from Products of Combustion of Gas.—Part II. Tube Experiments.

No. 101/10.—35th Report of the Joint Research Committee of the Institution and Leeds University. The Controlled Operation of a Carburetted Water Gas Plant—Part I. Factors Influencing the Performance of the Plant.

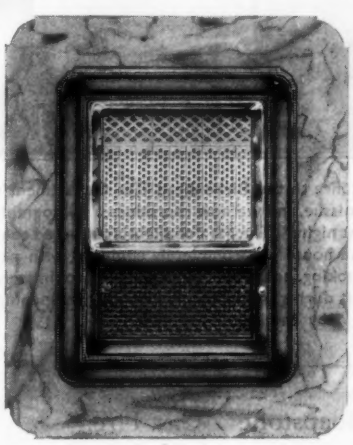
No. 102/11.—4th Report of the Liquor Effluents and Ammonia Sub-Committee.

No. 103/12.—25th Report of the Refractory Materials Joint Sub-Committee.

No. 104/13.—Institution Gas Research Fellowship Report; 1931-34. The Reactivities to Carbon Dioxide of Cokes and Other Forms of Carbon at High Temperatures.

New High "Beam" Fire.

A new High "Beam" built-in gas fire to be known as the "Westminster" has just been introduced by Richmonds Gas Stove Company, Ltd., of Warrington and London (Radiation Ltd.). This welcome addition completes a full range of Richmond High "Beam" designs, which include the "Reflector," "Flambeau," and "Castile" (hearth pattern fires), and the new "Built-in" "Westminster" shown in our illustration. The new fire is specially made to let into the wall above the level of the hearth. It fits flat against its marble, metal, or tiled surround, and has no projecting canopy or fender of any kind. The "Westminster" is of plain and dignified design and is in keeping with the modern desire for simplicity.



All the special Radiation features are provided throughout the whole series. The new design of the radiants and the addition of the upper or "scrubber" radiants give to these fires a higher standard of efficiency. Scientific tests have proved that the Radiation High "Beam" fire consumes only 3½ c.ft. of gas per hour to heat each radiant where the ordinary type of fire requires 4 c.ft. The "Westminster" fire front is framed by a chromium-plated reflector which not only adds to the pleasing appearance of the fire but serves to widen and deepen the glowing effect of the radiants. Another important feature, and one which has already captured the public interest, is the inclusion of the Radiation patent self-lighting tap. It is only necessary to turn the tap and the fire lights automatically. Since there is no by-pass light burning continuously, gas is only used when the fire is actually lighted.

The "Westminster" built-in High "Beam" fire is available in 7 and 9 radiant sizes and is supplied in a full range of coloured finishes. Complete and detailed directions in regard to the methods of "building-in" are sent out with each fire, and attractive selling literature is available for showroom use.

Amalgamation and Grouping.

Severn Valley and Iron Bridge.

The Severn Valley Gas Corporation announce that the recent offer made to the Iron Bridge Gas Light Company, Ltd., has been accepted by a substantial majority of the shareholders.

Sheffield Gas Company and Matlock.

At an Extraordinary General Meeting of the Matlock and District Gas Company, the transfer of the Company to the Sheffield Gas Company was agreed to on the following terms *inter alia:* The Sheffield Gas Company undertake to allot to every shareholder in the Matlock Company, ordinary stock to the nominal value of £129 for each £100 in the Matlock Company; the Sheffield Gas Company assume all debts and liabilities of the Matlock Gas Company including a bank overdraft raised to purchase the Matlock Bath Undertaking and to cover the cost of laying new mains; the Sheffield Company also undertake to pay compensation to the Directors and the Engineer, Manager, and Secretary, and to meet all legal costs incurred by the transfer.

Birkenhead's All-Gas House.

We made a brief reference to the Birkenhead Gas Department's all-gas house in a recent issue, and we now reproduce a photograph of this dwelling taken at night. The gas floodlighting aroused considerable interest. The house was completely equipped with gas for lighting, heating, cooking, and water heating. Approximately 10,000 persons visited it during the fortnight following its opening by the Mayor.

The "Soapstone" Gas Fire.

We noticed for the first time the other day a new type of gas fire in one of the showrooms of the Gas Light and Coke Company, which seems to embody a number of novel features.

The fact that this appliance is being shown by the Gas Light and Coke Company is, perhaps, sufficient proof of its qualities, but a few further particulars may be of interest to our readers. The fire goes by the name of the "Soapstone" gas fire and is manufactured by Messrs. Soapstone Products Company, of Wood Vale, Forest Hill, S.E. 23, and its principal feature is that it provides convected as well as radiant heat. The special quality of the "Soapstone" body, in addition to its pleasing appearance, is its high heat capacity, which enables heat to be given off for some time after the fire has been turned out.

The fire is made in three sizes—namely, the small 6-radiant (measuring about 20 in. high by 13 in. wide by 8 in. deep); the large 6-radiant (24 in. by 15 in. by 9 in.); and the 9-radiant size (27 in. by 20 in. by 9 in.). The respective gas rates of the three sizes are 11, 22, and 33 c.ft. per hour, while the 9-radiant size is fitted with a "Duplex" burner, enabling either six or nine radiants to be used as desired.

National Gas Council.

Meeting of Central Executive Board.

A meeting of the Central Executive Board of the National Gas Council was held at 28, Grosvenor Gardens, S.W. 1, on Tuesday, Jan. 8—Sir DAVID MILNE-WATSON, LL.D., D.L. (President of the Council), presiding.

The following matters were considered:

Electricity Supply Bill, 1934.—Government Measure.

A Report was submitted with regard to a Special Meeting of the Joint Co-ordination Committee of the National Bodies held on Dec. 19.

Holding Companies in the Gas Industry.—Reports of further meetings of the District Executive Board were submitted.

Conjoint Conference of Public Utility Associations.—A Report was submitted of the meeting of the Council held on Dec. 17 with regard to:

1. *Rating and Valuation:*

It is satisfactory to be able to report that all the interests represented on the Council—namely, gas, water, and electricity—have now unanimously agreed a resolution with regard to certain matters in connection with the valuation of public utility undertakings. A small drafting committee has been appointed to prepare reports on this matter for submission to the Ministry of Health and the Central Valuation Committee.

2. *Housing Act*, 1930; introduction of a Bill by the Government dealing with compensation payable in respect of Housing Schemes under the Housing Act, 1930:

It was reported that a communication had been addressed to the Ministry of Health on behalf of the interests represented on the Conjoint Conference with regard to compensation to public utility undertakings which may be detrimentally affected by slum clearance schemes.

3. *Mains and Cables in Highways:*
Private Streets; the question of control by Highway Authorities.

The present position with regard to these matters was considered.

4. *Road and Rail Traffic Act*, 1933; keeping of logs.

The representations which had been made to the Ministry of Transport with the object of obtaining exemption for public utility undertakings from keeping records in accordance with the provisions of this Act were reported. The Conjoint Conference had been informed that their representations had been received by the Minister and that these would be considered.

5. *Annual Meeting of the Conjoint Conference of Public Utility Associations:*

This meeting has been fixed to take place in the Board Room at 28, Grosvenor Gardens, on Thursday, Jan. 31, at 3 p.m. Lord Mount Temple, the President of the Conference, will preside.

6. *Nomination of Representatives to Serve on the Council of the Conjoint Conference on Behalf of the National Gas Council:*

The following representatives were appointed to serve on the Council for the ensuing year—namely:

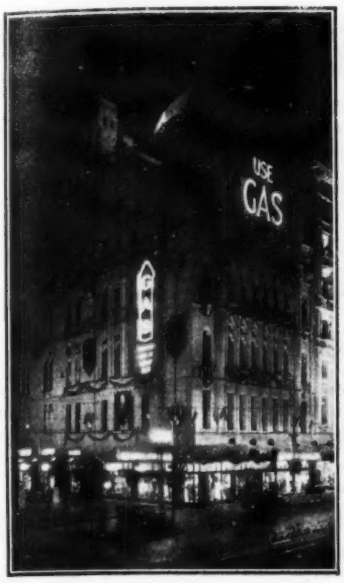
Mr. R. Halkett,
Alderman Sir William Kay, J.P.,
Mr. Stephen Lacey,
Mr. A. W. Smith,
Mr. W. J. Smith (Bolton), and
Col. R. L. Norrington.

These representatives were also nominated to attend the Annual General Meeting, together with four additional representatives on behalf of the Gas Industry.

London and Counties Coke Association.

A letter which had been addressed by the London and Counties Coke Association to the Secretaries of each of the Commercial Sections of the Associations of Gas Engineers and Managers throughout the country was considered. This letter indicated that the Association was now prepared to accept gas undertakings in the Provinces outside its area as affiliated members of the Association under certain conditions. Affiliated membership would entitle such undertakings to receive all technical information and advertising material and, what is of more importance, advice from the technical staff for specific work.

A report was submitted with regard to the action taken in the case of a certain objectionable film which was being shown in a large city in the provinces, and the officers were instructed to take similar action in regard to films of this character.



The Exterior at Night.

FINE EXAMPLE OF GAS SHOWROOMS IN AUSTRALIA

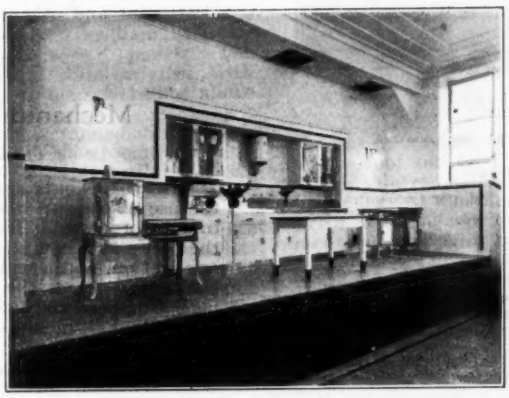
Metropolitan Company's Enterprise.

Our photographs give some views of the reconstructed Head Offices of the Metropolitan Gas Company of Melbourne. The floodlighting of the exterior has been effected by fourteen 12-light Foster and Pullen lamps fitted with adjustable slatted steel reflectors, which clearly reveal the architectural features of the building. The light and shade effects are warm and artistic without being obtrusive, while there is an entire absence of glare. The facades are finished in synthetic stone, and, generally, the results obtained by floodlighting are very pleasing.

General View of the Main Showroom.

Some of the Sectionalized Displays.

For the outside lighting under the verandahs, fronting the display windows, "Littleton" lamps, chromium-plated with octagonal panel globes, and equipped with distant control, are installed. The upper portion of these lamps being housed inside a ventilated shaft, only the reflector and globe are visible from below. The effect obtained has been well worth the extra outlay.



The Finely Equipped Demonstration Platform.

The Ground Floor Showroom, which has a frontage of 60 ft. and a depth of 170 ft., is lighted by 34 "Bon Marche" lamps, each of six mantles and operated by switches fitted flush with the walls. They are spaced to conform with the design of the ceiling, and the general effect is excellent. Both "Littleton" and "Bon Marche" lamps were supplied by Wm. Sugg & Co., Ltd.

The Import Duties Advisory Committee give notice of an application for an increase in the import duty on tubes of all sections manufactured wholly of copper or of alloys containing more than 50% by weight of copper. Any representations which interested parties may desire to make in regard to this application should be addressed in writing to the Secretary, Import Duties Advisory Committee, Caxton House (West Block), Tothill Street, Westminster, S.W. 1, not later than Jan. 31.

British Fuel for R.A.F.—Colonel W. A. Bristow, Chairman and Managing Director of Low Temperature Carbonisation, Ltd., in a statement on the use by the Royal Air Force of motor spirit made from British coal, recently said: "I have the authority of the Air Ministry for saying that coal spirit produced in this country has proved most satisfactory. The last bulk consignment was passed by the Inspectors of the Air Ministry a day or two ago, and has been delivered to the Royal Air Force."

New Scale of Charges at Leicester.

Alternative Two-Part Tariff.

The following alternative two-part tariffs for ordinary and prepayment consumers have been introduced by the Leicester Gas Department to operate as from the beginning of the year:

Ordinary Meters.

PART 1.

A weekly fixed charge based on the number of rooms in the consumer's premises.

Number of Rooms in Premises.	Weekly Charge.	Quarterly Charge (13 Weeks).
	d.	s. d.
One or two rooms	4½	5 0
Three or four rooms	6	6 6
Five, six, or seven rooms	7	7 6
For more than seven rooms	7*	7 6†
Maximum charges	2s. 4d.	30 0

* *Plus* 2½d. for each room over seven. † *Plus* 2s. 6d. for each room over seven.

PART 2.

WITHIN THE CITY.

Gas to be charged at the rate of 6·6d. per therm, equivalent to 2s. 6d. per 1,000 c.ft.

OUTSIDE THE CITY.

Inner Circle—	
Birstall, Braunstone (part), Evington, Glen Parva, Humberstone, Lubbesthorpe, New Parks, Oadby, Scraptoft.	0·8d. per therm extra (equivalent to 4d. per 1,000 c.ft. extra).
Outer Circle—	
Anstey, Botcheston, Braunstone (part), Cropston, Desford, Glenfield, Glen Magna, Groby, Kirby Muxloe, Markfield, Newtown Linford, Newtown Unthank, Ratby, Rothley, Swithland, Thurcaston, Woodhouse Eaves.	1·7d. per therm extra (equivalent to 8d. per 1,000 c.ft. extra).

Prepayment Meters.

PART 1.

A quarterly standard consumption of gas based on the number of rooms in the consumer's premises, to be paid for at the following rates according to the district.

Standard Quarterly Consumptions.

Number of Rooms in Premises.	Therms.	C.Ft.
One or two rooms	22·5	5,000
Three or four rooms	27	6,000
Five, six, or seven rooms	31·5	7,000
For more than seven rooms	4·5*	1,000*

* Extra for each room over seven.

WITHIN THE CITY.

10·58d. per therm, or 3s. 11·62d. per 1,000 c.ft.

OUTSIDE THE CITY.

Inner circle.—11·90d. per therm, or 4s. 5·5d. per 1,000 c.ft.
Outer circle.—12·85d. ,, ,, 4s. 9·82d. ,, ,,

PART 2.

All gas consumed over and above the standard consumption in any one quarter, to be paid for at the rates mentioned above applicable to the premises, *less* a rebate at the rate of 2·6d. per therm (equivalent to 1s. per 1,000 c.ft.).

Every domestic consumer using a gas cooker is entitled to participate in these alternative two-part tariffs, and for the purpose of these scales, the rooms enumerated are the usual living rooms, including bedrooms, kitchens, and bathrooms, but excluding sculleries, landings, lobbies, closets, and garages.

Standard Fitting and Appliance Certification in Australia.

When a number of Melbourne architects paid a visit of inspection to the new Showrooms of the Metropolitan Gas Company on Oct. 15 last, Mr. A. S. Fitzpatrick, Ph.D., M.Sc., A.M.I.Chem.E. (Research Officer to the Gas Companies' Association of Australia), addressed them on the subject of new developments in gas appliances.

In the course of his remarks he emphasized that the performance of a well-designed and constructed gas appliance can be ruined by faulty installation. Unfortunately in the past there has been no uniformity in gas-fitting practice, and the gas undertakings have had no legal powers to enforce correct methods of installation. However, these powers were granted in the Gas Regulation Act, 1933, and, in consequence, the Victorian gas undertakings, after consultation with the Master Plumbers' Association and the gas appliance manufacturers, have agreed upon a draft set of uniform gasfitting regulations. It is hoped that these regulations will soon become effective through the granting of the Minister's approval and their consequent gazetting.

In seeking to bring about improvements and new developments to meet Australian needs, observed Mr. Fitzpatrick, the gas companies have recognized the value of co-operation with appliance manufacturers. At present there are two bodies, the Gas Companies' Association of Australia and the New South Wales Commercial Gas Association, which have established gas utilization laboratories in Melbourne and Sydney respectively. These organizations work in close co-operation, and one of their most important activities is the establishment of an appliance testing and certification scheme under which every make of (initially) domestic gas appliance on the Australian market will be tested. If it complies with certain standards of construction and performance, the maker will be authorized to fix an approval badge to every appliance of that make offered for sale.

It is anticipated that, in this way, the public will be able to distinguish and avoid those makes of appliances which are not up to what the testing laboratory and the leaders of the Gas Industry—including gas company officers as well as manufacturers—regard as reasonable standards of safety, efficiency, and good construction. The gas companies have been assured by the appliance manufacturers of their keen support of this scheme, and it is believed that the scheme will be fruitful both of improvement in existing conditions and new developments to the benefit of the whole community.

Coal-Burning Appliance Makers' Association.

Aims and Objects.

The aim of this recently formed Association is to represent common interests of members and strengthen their position in their relations with producers and distributors of coal and coke and with consumers.

There is, we understand, no opposition to other fuels, but "the Association will stand for equality of opportunity for solid fuel. Conferences will be organized and papers read; technical reports will be made on smoke abatement and other relevant subjects."

Mechanical World Year Book.*

1935 Edition.

Two of the outstanding trends in modern industry are the use of pressure technique and the development of continuous processes. These have brought the compressor and the pump to a new significance, requiring a much-extended application, and a wider understanding by engineers of the characteristics of the machines and fluids employed. To meet this need the 1935 edition of the "Mechanical World Year Book" includes two new sections. One, on compressors, presents the subject-matter in a way which will facilitate general application; the other, on pumps, deals with selection more particularly. Pumps have become almost a standard product of the engineering industry. Their design and construction have "crystallized," and it is in their application that development is most rapid. Accordingly, the new section concentrates on this aspect of the subject. Another new feature of the Year Book is the arrangement of certain sections in alternate editions. In this way any two consecutive issues cover a much wider field than is possible with one. In all editions, however, the tabular matter and, in some cases, condensed data from other sections, are included. As in previous editions, the book contains a great quantity of mechanical data which continues to make it invaluable to engineers in works and factory alike.

* Published by Emmott & Co., Ltd., 31, King Street West, Manchester. Price, 1s. 6d. net.

New London Showrooms for the Gas Light and Coke Company

The new Sloane Street Showrooms of the Gas Light and Coke Company strike a modernistic note in showroom design, and provide another central London display centre for a high-class residential district.

There is a definite atmosphere of "up-to-dateness" about the new showrooms of the Gas Light and Coke Company, recently opened at 31, Sloane Street, S.W.1. The present tendency towards a greater utilization of distinctive lighting effects, pleasing and harmonious colourings, simplicity of line, and thoroughly modern display methods has been indulged in to the full, and the result has produced a gas showroom which is distinctly out of the ordinary.

The Company have set up these showrooms with a full appreciation of the class of consumer they are intended to serve, for the area consists in large measure of well-to-do flat premises and private mansions whose residents are almost exclusively quarterly consumers. This is further borne out by the fact that almost all the gas appliances disposed of in this district are by direct sales, there being little or no simple hire.

Some criticism has been levelled in the Industry at showrooms which are regarded as so palatial and awe-inspiring as to scare away the average customer, or, as a gas salesman recently put it, rather aptly, premises which look as if a special permit is required from the Town Clerk before they may be entered. Such criticism is quite justified; but it cannot be said that the Sloane Street Showrooms come under this category, for while thoroughly modern in design, they strike a very happy medium as regards general impression.

Non-Reflecting Windows.

The windows are of the Pollard non-reflecting type which are becoming increasingly popular at the present time, giving a clear and uninterrupted view to the farthest corners of the interior. A panel along the bottom of the windows illuminates at night a series of "Mr. Therms" waving a cheery invitation to enter, while the whole entrance porch is, indeed, after dusk a brilliant archway of light, effected by illuminated frosted panels. The window framework and fascia are of stainless steel, with the Company's name executed in tubular lettering above the portico.

Upon entering the building one is immediately struck by the delightful lighting of the main showroom. In addition to the attractive gas lighting, a beautiful mellow-coloured glow from concealed Neon tubes illuminates the specially constructed artificial ceiling which is suspended from the original ceiling. The colour of the Neon lights may be altered at will, so that one day the showroom has an orange tinge, another day green, and so on. It is somewhat refreshing to find that a Gas Company has not hesitated to utilize electrical lighting in its showrooms where this has been considered beneficial to the general effect or particular display desired; and while not suggesting that in the majority of cases gas cannot carry out most normal lighting as well as, or better than, electricity, there are certain circumstances, such as this one, when Neon lighting is definitely valuable.

The appliances displayed on this floor, and also in the basement showrooms below, are attractively grouped in alcoves illuminated from lamps set above glass panels, or, in the case of gas fires, are set in pleasing surrounds in a variety of different finishes. Also on this floor is a gadget table on which all the latest small appliances which can be plugged in are displayed. At the far end of the showroom is the counter for the payment of accounts, and a special corner set apart with table and chairs and built in panel gas fire where inquiries or complaints are dealt with.

The Basement Showrooms.

There are additional spacious showrooms in the basement, where further gas fires, cookers, radiators, and water heaters are displayed to good effect. Here also are examples of domestic coke grates for burning the Company's special "Cleanglow" fuel, while the water heater display is particularly noteworthy, comprising a group of white enamel finished geysers and storage heaters which discharge their hot water into a common stainless steel trough. The lighting of the basement is effectively carried out by switch-controlled fittings of modern design, together with lighting over individual alcoves, while an interesting feature is the glass-panelled ceiling which is particularly easy to keep clean.

At the foot of the stairs is a small coloured table on which some new and useful gas gadget is displayed, the appliance being changed daily so that there is always something fresh each day on the table to catch the eye and stimulate interest.

It should be mentioned that the majority of appliances are connected up and in working order, the ventilation of the gas fires being effected artificially by an electric motor on the roof and suitable ducts.

Gas Water Heating Section.

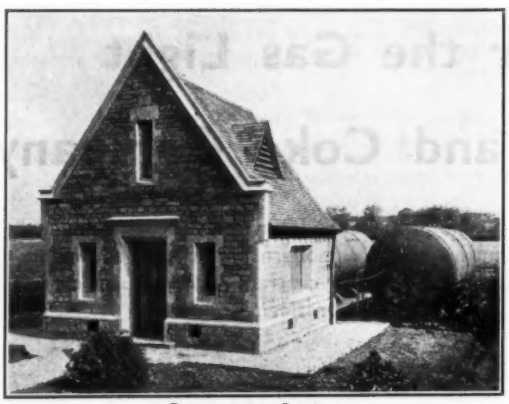
The showrooms are centrally heated by a "Rex" gas boiler in the basement, adjacent to which is an "Emperor" boiler which provides for the hot water requirements of the staff. Both, of course, are automatic in operation. The "Rex" boiler additionally provides the central heating for the whole building, there being further floors of office premises above the showrooms.

The design of the premises was carried out by the Gas Light and Coke Company's Architect, Mr. Walter J. Tapper, to whom great credit is due for producing a gas showroom which strikes so new a note. That a gas showroom was necessary in this district has been realized for some time, and Mr. J. Brown, who is in charge of the showroom, told us that business is increasing very satisfactorily in the neighbourhood, there being a particularly gratifying demand for gas-operated refrigerators, an impressive display of which is staged just inside the entrance.

There was no official opening ceremony for these premises, as is usually the case when the Gas Light and Coke Company inaugurate new showrooms, for the reason that they grew so gradually and were, in fact, in use so long before they were actually completed as to make such a ceremony rather farcical. A novel method was, however, adopted to introduce them formally just before Christmas to consumers in the district. The basement showrooms were converted into a lounge, and quarterly consumers were invited to take coffee there and make an inspection of the premises when a very excellent impression was made.

Automatic High-Pressure Storage at Cirencester

by
J. G. CLEATOR,
M.Inst.Gas E.



Compressing Station.

Mr. J. G. Cleator, Engineer and Manager of the Cirencester Gas Company, explains some of the methods adopted by his Undertaking in maintaining a sufficient pressure during peak loads at parts of the district remote from the gas-works.

One of the most difficult problems to be overcome by those responsible for the distribution of gas is the maintenance of sufficient pressure during peak loads, particularly between the hours of 11 a.m. and 1 p.m. on Sundays, at parts of the district remote from the works.

Not only must the pressure be adequate, but to give satisfaction it must not be subject to much variation.

Until a little over a year ago the Stratton district of the Cirencester Gas Company suffered severely from insufficient pressure during the Sunday cooking period. Although the pressure at the works' governor was raised to 12 in. during the heaviest period of demand, the pressure at the extreme limits of that district fell to under 2 in. for short periods, and some consumers were unable to use their gas ovens to cook the Sunday joint.

The gas-works is situated about 2½ miles from Stratton and on the opposite side of Cirencester. Any extra pressure given from the works was, to a large extent, absorbed by Cirencester consumers, and those situated near the works suffered from excessive pressure and wide variations. The Sunday cooking load is shown on the graph, and most gas engineers will be familiar with similar conditions.

Proposed Schemes.

The matter was brought to a head by the proposed erection of a housing estate at Stratton, and the following proposals to overcome the difficulty were considered:

1. A 10-in. low-pressure main, from a point ½ mile from the works to Stratton.
2. A high-pressure main from the works to Stratton, via the outskirts of Cirencester.
3. A gasholder in steel tank, erected at Stratton, with booster to fill the holder at night.
4. An automatic high-pressure storage plant.

As the Stratton district is residential, a gasholder was considered to be too unsightly, and the proposal would have met with strong opposition.

After going very carefully into the matter, it was decided to erect the high-pressure storage plant at the best available site, and the work was entrusted to Messrs. George Waller & Son, Ltd., of Stroud. As the building housing the compressing plant would be facing the main road from Cirencester to Cheltenham and Gloucester, it was decided to erect a stone building of good appearance, and although it would add to the cost of the scheme, it was thought desirable to conform with the amenities of the district.

Before proceeding with the work, it was necessary to obtain the consent of the residents near the site, and as most people objected to an ordinary gasholder, a drawing of the proposed plant was shown to each householder. After inspection of the drawing, all opposition was withdrawn.

Description of Plant.

In general, the plant consists of gas engine driven compressor, high-pressure storage holders, reducing governors, and all necessary equipment to make the Station completely automatically operated.

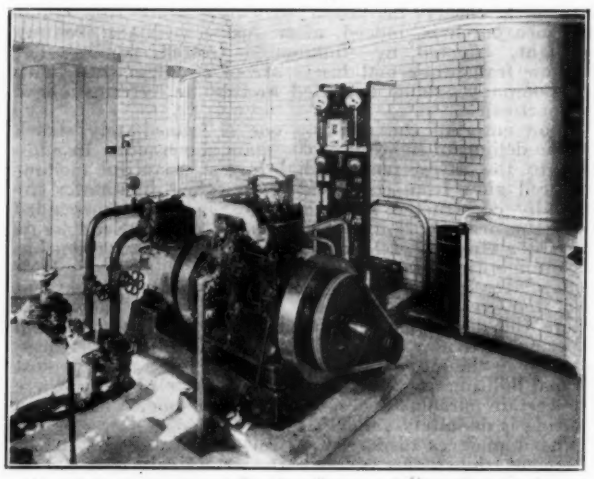
The nominal capacity of the compressor set is 2,000 c.ft. per hour, and it is designed to work up to a normal outlet pressure of 60 lbs. per sq. in. gauge. There are two storage holders, although only one was installed at first. Each of these holders has an approximate capacity of 2,500 c.ft. measured at atmospheric pressure. When charged to a pressure of 60 lbs. per sq. in. the capacity is 12,500 c.ft., thus giving discharge capacity of 10,000 c.ft. or 20,000 c.ft. for the two holders. It was found that to charge one holder from atmospheric pressure to 60 lbs. per sq. in. took 5 hours 8 minutes.

Compressor.

This consists of a single cylinder, single acting vertical compressor of the enclosed type, having a normal speed of 600 r.p.m. The cylinder and crankcase castings are of sound grey iron, and large inspection doors are fitted to the crank case to give easy access to the crankshaft, connecting rod, and main bearings. The piston is made of "Alpax" alloy, and, together with the alloy steel connecting rod and crankshaft, the weight of the reciprocating parts is so reduced that a satisfactory balance is obtained.

Automatic inlet and outlet valves are fitted, and these are of the Rogler spring plate type. They are fitted with removable nickel iron seatings and a hand hole in the cylinder head enables them to be taken out easily. The cylinder, cylinder head, and valve chest are water cooled, the water being circulated by thermo system.

The compressor is provided with forced lubrication by means of a gear type pump mounted on the crankshaft.



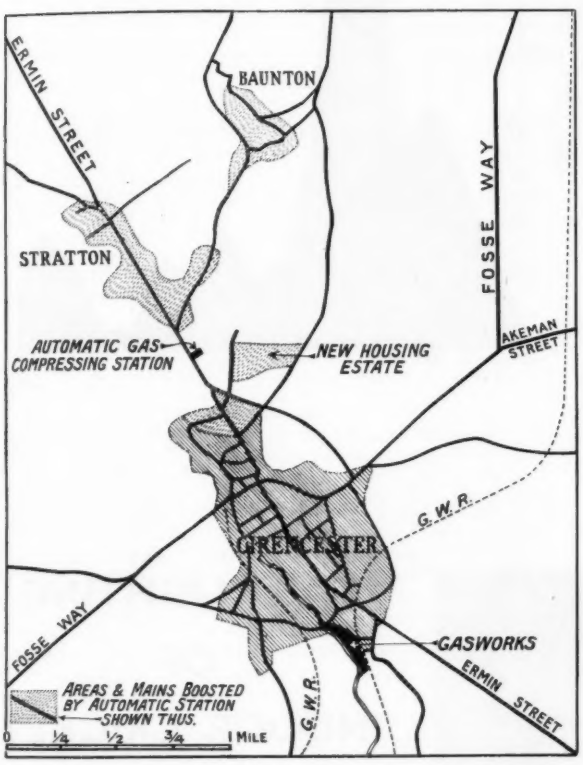
This takes its oil from the sump in the crankcase and feeds both main bearings and each end of the connecting rod. Main bearings and the large end of the connecting rod are lined with Hoyt's No. 11 alloy which ensures excellent wearing properties and long running without attention.

The compressor is mounted on a cast-iron baseplate of rigid construction. This baseplate is extended to take the engine as well. The engine and compressor are coupled by means of an automatic centrifugal clutch coupling, this

latter being so adjusted that the engine is allowed to run up to 75% of its full speed before the clutch commences to engage and turn the compressor.

Engine.

The gas engine is a " Lister " standard vertical enclosed twin cylinder model arranged for fully automatic working and specially suitable for long periods of continuous running without attention. The engine develops 9 B.H.P. at 600 r.p.m. when running on town gas. It is fitted with



Plan of Cirencester and District, showing Mains and Areas boosted by the Automatic Compressing Station.

dual magneto ignition and sparking plugs, and forced lubrication. As the district in which the plant is situated is a residential one, silent running is essential, and the exhaust is taken through an expansion chamber in the compressor house before it is passed to the standard silencer, which is fixed in a pit outside the building.

The engine also drives through a twin " Vee " belt a motor generator. This latter serves the dual purpose of charging the 24-volt storage battery and is also the starting motor for the engine. The battery, in addition to supplying the current to the starting motor, also supplies the necessary current for the electrically operated automatic control gear.

Switch Gear.

The switch board consists of three panels arranged vertically one above the other. The central panel comprises the usual battery charging equipment—*i.e.*, volt and ampère meters, switches, fuse shunt wound regulator, &c. Below this is a panel on which is mounted the automatic starter for the motor generator, and the solenoid operated switches with timelags which control the dual solenoid mounted on the side of the engine. One section of this solenoid opens and closes the engine gas cock, while the other operates the change over movement from half to full compression.

The gas pressure control panel is fitted at the top of the switch board, and on this is mounted a Venner time switch, a low-pressure diaphragm gauge with an adjustable electric contact, a high-pressure gauge with two adjustable electric contacts, and three relays which connect these three items with the automatic starter on the bottom panel.

Governors.

Also arranged in the compressor house is a set of 3-in. diameter district reducing governors. These are for reducing the holder pressure down to that of the district main.

Automatic Operation.

As soon as the plant starts up, the pull of the compressor on the inlet side causes a drop in pressure on the district main of up to 1 in. W.G. As this drop in pressure is, in this case, more than is desirable during certain periods, it is essential that the set should only work when there is ample pressure available and be inoperative during the usual peak load periods. A " Venner " time switch is used to achieve this result, simply by isolating the automatic starting gear during the periods of from 7 a.m. to 2 p.m. and 4 p.m. to 11 p.m. It should be added that the periods during which the set cannot work are easily adjustable and can be arranged to suit the varying hours of peak loads.

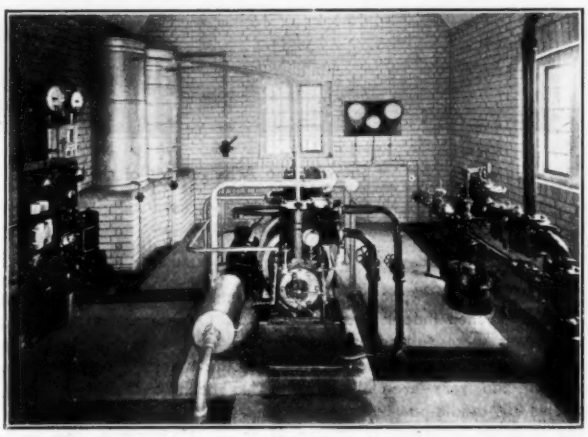
In this particular case, a minimum pressure of 3 in. W.G. in the district main is the lowest pressure at which it is desirable for the compressor to work. Should, therefore, during a working period, any unusual demand in addition to what the compressor is taking cause the pressure to fall below 3 in. W.G., the district pressure is safeguarded by a low-pressure gauge switch which stops the set. It also keeps the starting motor isolated until such time as the pressure in the main has risen to 3 in. W.G.

The high-pressure gauge switch has maximum and minimum electrical contacts set at 60 lbs. and 45 lbs. pressure respectively, although these are easily adjustable to suit conditions required. When the pressure in the holders drops to 45 lbs. per sq. in., the minimum contact is made and the set is ready to start up at the first working period —*i.e.*, 11 p.m. or 2 p.m.—on the time switch.

When released by the time switch, the automatic switches close, opening the gas cock on the engine and holding the engine on half compression. In addition, the motor generator turns the engine sharply and starts it. The time lag on the solenoid is released and allows the engine to change over to full compression. As soon as the engine reaches 75% full speed (450 r.p.m.) the centrifugal clutch between the engine and compressor begins to engage, and very quickly the compressor picks up to full speed and is pumping into the holder. The motor-generator also changes over from motoring to charging the 24-volt storage battery.

Should the engine fail to start, the starting motor can only run for about 1½ minutes, when an emergency switch opens and the motor is shut off, thus preventing the battery from being exhausted. At the same time a red warning lamp, visible from outside the building, lights and remains alight until switched off by hand when someone comes to attend to the plant.

When the holders are charged up to 60 lbs. per sq. in. pressure, the maximum contact on the high-pressure gauge switch releases the automatic gear. This shuts off the engine gas cock, and, in addition, the magnetos are " earthed." Thus the compressor is stopped. In the pipe line between the outlet of the compressor and the holders, a special non-return valve is fitted to prevent any leak back



through the compressor valves. It also keeps the holder pressure from the compressor piston, so that when the set is started, it is not immediately against load.

The outlet of both the holders is connected back to the district main through a 3 in. district governor which reduces the pressure in the holder down to 5 in. W.G. and maintains this pressure on the district during the peak load periods.

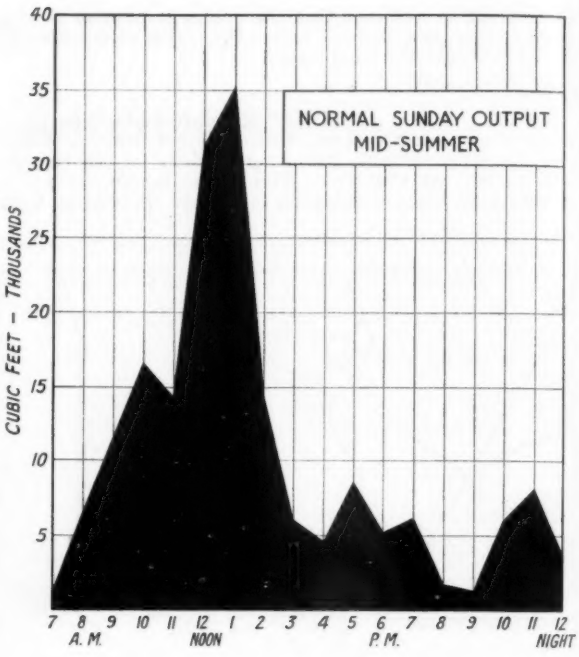
Between the district governor and the district main, there are fitted a cut-off valve and a mercury seal. The

cut-off valve is operated by oil pressure from the gear pump on the engine, and so shuts the governor off the whole time the plant is running, thus preventing the compressor pumping through the holder back into the main. The mercury seal is set at 12 in. W.G. and blows at this pressure, preventing the pressure in the main rising above this point in the event of the reducing governor failing to close dead tight.

Should the engine for any reason fail to stop when the pressure in the holders reaches 60 lbs. per sq. in., a spring loaded relief valve, set to open at 65 lbs. per sq. in., is fitted to by-pass the gas back to the inlet side of the compressor. It might be added that each holder is fitted with a relief valve to atmosphere to blow at 75 lbs. per sq. in. as a final safety device.

It will be noticed that minimum contact on the high-pressure switch gauge is set at 45 lbs. pressure, so that the plant is started up as soon as the pressure in the holders falls to this level. This means that less than half the capacity of the holders has been used, but the reason is to ensure that the holders shall not be exhausted by two consecutive discharge periods without a charge during one of the running periods in between.

The plant has proved very satisfactory over a period of 16 months, and has completely cured all pressure troubles. It requires little attention, and is very reliable in action. It is only definitely inspected once a week, the requirement then being water for the cooling tanks. Oil for the engine and compressor is required once a month. The time switch runs 48 days on one winding, and the batteries require topping up once a month. Condensate from the holders is also drawn off once a month.

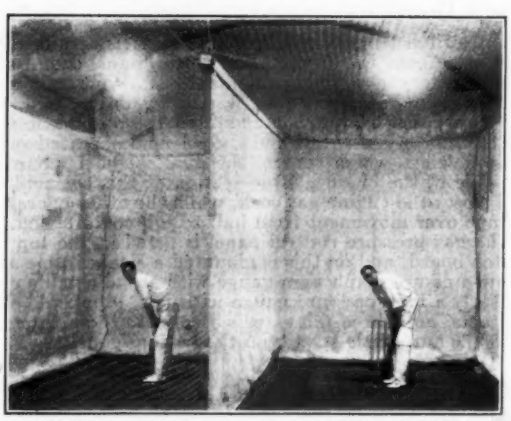


GAS LIGHTING OF INDOOR CRICKET SCHOOL

Successful Installation at Colchester

Showing the Arrangement of the Lighting.

The accompanying photographs show the gas lighting of the recently opened Indoor Cricket School at Colchester, which installation was successfully carried out by the Colchester Gas Company in open competition. The lighting is on the "Keith" high-pressure system, and very even illumination has been obtained by using twelve 300-candle-power units at a height of 12 ft. The area of the building is about 21 ft. by 87 ft. L. C. Eastman, the well-known Essex County professional, comments very favourably on the installation, while the proprietors of the Cricket School are also very pleased with the results obtained. So satisfied, indeed, were the proprietors with the excellence of the lighting, that further orders have been secured for the heating of the dressing rooms and cafe bar by gas radiators, and for the provision of hot water for shower and basins by a multi-point geyser.



At the Wickets—R. Taylor and L. C. Eastman, of the Essex County Club.

Automatic Control for Gas and Coke-Fired Boilers

The striking developments that are taking place in the automatic control of gas, coke, and other types of domestic and small boilers generally was well brought out during an informal discussion on this subject which was arranged by the Institute of Fuel on Thursday, Dec. 13.

The meeting took place at Bush House, Aldwych, London, and the interest in the subject was indicated by the very large attendance. The Chair was taken by Mr. H. L. Pirie, Chief Engineer of the Coal Utilisation Council, and the wide range of interest covered will be gathered when it is pointed out that the case for automatic control was put forward by advocates of gas and coke, oil, and coal. The speaker on behalf of gas and coke was Dr. F. M. H. Taylor, of the Gas Light and Coke Company, while on behalf of oil was Mr. W. A. Hubbard, Director of Combustions, Ltd., and on behalf of coal Mr. J. E. O'Breen, of Messrs. James Gordon & Co., Ltd. The principle on which these informal discussions are conducted is that the advocates of particular methods shall put forward their case in their own way, but that there shall be no acrimonious arguments as to the relative merits of one form of fuel over another. Another feature which we think is to be commended at such informal meetings is that the Press is trusted to the extent of being allowed, after reporting the speeches of the opener or openers of the debate, to give impressions of the subsequent discussion. That, at least, is a compliment to the Press and a recognition—which does not always exist—that it has the good sense to exercise a wise discretion. Thus those interested outside are given an account of what takes place and those attending the meeting can give full vent to their feelings, if they desire to, in the knowledge that there will not be a devastating report of what they have said, all cold-bloodedly attributed to them.

Dr. F. M. H. Taylor, in the course of his remarks, pointed out that furnace temperature control may be achieved by thermo-electric methods. He added that one of the difficulties of accurate control of all types of heating appliances by natural draught has been the fluctuations in the flue pull, but this might be obviated by the provision of a draught stabilizer in the flue, this taking the form of a balanced door in which the opening depends upon the difference in pressure between the flue and the outside atmosphere. If the pull of the chimney is high, more air is admitted to the flue by opening the draught stabilizer until the flue pull is balanced. In gas-fired boilers the same effect is obtained by a flue baffle, which is simply a break in the flue coupled with a deflector to prevent interference with combustion by down-draught and to prevent any reduction of efficiency by up-draught.

The control of coke-fired boilers, however, is not quite the same, there being no direct regulation of fuel. In this case the draught is regulated usually by means of small self-acting thermostats. Draught can be cut off completely in coke-fired boilers, thus virtually ceasing combustion. Thus, although a hot fuel bed is left on the fire, there is no distillation of volatile matter as with bituminous coal, so that the need for a further quantity of air is not present, and thus the shutting off of combustion can be made more complete.

The bi-metallic strip thermostat, continued Dr. Taylor, has not yet proved very successful. The vapour pressure type, however, is of certain value, and the stearine paste filled thermostat is proving a really valuable means of control. For larger boilers and central heating plant, natural draught may be controlled by damper operating motors.

On steam raising plant a forced draught fan is controlled by a pressurestat in the steam main, the fan motor stopping and starting according to the demands for steam. It has been found that where it is possible to fit a natural draught control by damper operation, this is not only cheaper but more satisfactory.

One of the advantages found with thermostatic control of coke boilers is that the efficiency of the boiler does not vary with fluctuating demand, the control of air alone being sufficient to maintain optimum efficiencies during the whole of its operation. On and off operation is inevitable with this type of control, but is not necessarily a disadvantage because very few installations require a complete shutting-off of the heat on the operation of the thermostat. Through the absence of volatile matter there is no necessity for secondary air to burn off gases or smoke. The provision of secondary air may not prevent difficulties but its regulation under fluctuating load conditions certainly does.

Dr. Taylor referred to safety devices designed to cut off combustion in the event of the flame going out, failure of operation of any control gear, or failure of water supply in boilers, &c. With coke, he said, the only possibility of danger arises when electrical controls are used, the principle in this case being that of release of the dampers magnetically.

He emphasized how the value of accurate furnace control is being more widely appreciated, commented on the hopes of big developments in greenhouse heating thermostatically controlled, and concluded by stressing the point that the effect of automatic control in buildings on health and comfort is not yet fully realized although there was the certainty that within the next decade we shall see the great British public becoming definitely thermostatically minded.

The position of automatic control with oil and coal fired apparatus was stated with equal restraint. The feature throughout the introductory remarks and the discussion was the manner in which automatical control is being increasingly adopted.

Points from the Discussion.

Now for a few of the points mentioned by subsequent speakers. Inevitably there was the sceptic—or was it professed scepticism as a "draw"? Fears, at any rate, were expressed as to the possibilities in the event of any of this automatic control apparatus going wrong, and Dr. Taylor was taken to task for asserting that with the coke-fired boiler the draught can be completely cut off without any danger. It was alleged that in such circumstances CO would be given off, and that therefore it was essential to have some draught over the top of the fire to remove this. The answer to this was that with a suitably controlled thin fire bed in a coke furnace, CO is definitely not given off but only CO_2.

It was quickly noticed by some speakers that nothing had been said of the economics of automatic control, but it was shown that it is very difficult to give figures of saving in fuel costs without consideration of the actual circumstances. Nevertheless, round figures of 15% and the possibility of writing-off the cost of the control apparatus in from one to three years were mentioned, although in the case of small domestic heating apparatus it was admitted that the only saving would be in labour and, indeed, the installation of automatic control might not be justified.

In a quite good humoured manner certain oil representatives professed to detect in Dr. Taylor's original comments a certain groping in the dark on the part of the Gas Industry in this matter of automatic control, and the inquiry was made as to what provision is made by the Gas Industry for what the oil people call combustion safety devices such as are claimed to exist with the oil burner, to which the original credit was given to America. Incidentally, a plea was made that British inventors and engineers should set to work to improve on what the Americans have given us in automatic control generally. Here again the answer was that experience has shown the degree of safety with both gas and coke to be of a high order.

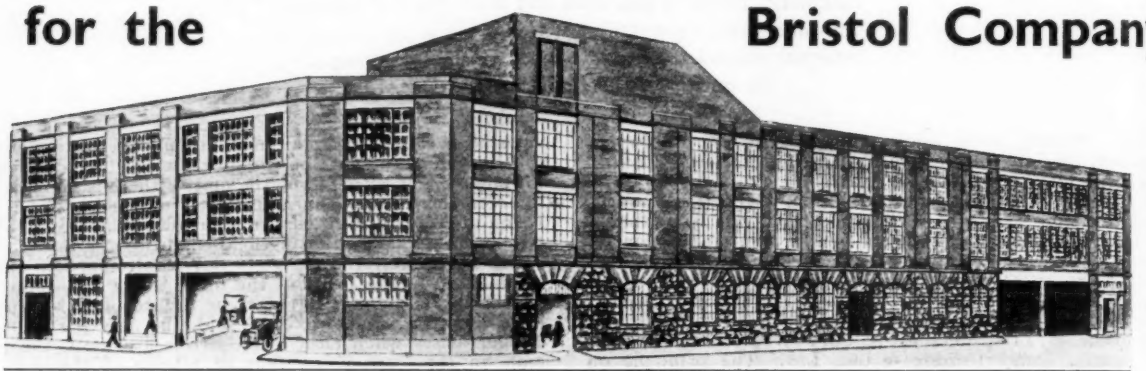
A trouble mentioned in connection with the small coke-burning boiler of the automatic type was the "bridging" of the coke in the bunker, which led to the choking of the feed to the boiler, but actually there is no risk of that. A space of 10 in. is required to maintain the automatic flow of fuel and usually an additional 3 in. is allowed.

Doubts expressed as to the reliability of so much automatic control were promptly dealt with by the protagonists

of all the forms of fuel that had been discussed, and instance after instance of installations having been at work for years with little or no trouble were forthcoming.

The outcome of the discussion was definitely that automatic control of gas, coke, oil, and coal firing for domestic and other boilers is highly desirable, but that there is yet a vast unexplored field for improvement. In short, as it was aptly put by one speaker, we must continue to adopt, adapt, and improve, because automatic control with its accuracy, reliability, and low maintenance means a tremendous improvement in standards of heat and hot water supply.

New Service Department for the Bristol Company



Extensions and Reconstruction at Barton Street, Bristol.

The business of the Bristol Gas Company has been increasing very rapidly in recent times, and, as already mentioned in the "JOURNAL," has necessitated a complete re-building of the Company's Offices and Showrooms in Colston Street.

But not only has the Company outgrown its Offices and Showrooms; the stability and enterprise of the Gas Industry is typified once more in Bristol by the fact that the workshops and stores in Barton Street are also now being largely extended. It has been found that these premises, opened at the beginning of 1926, and at that time providing employment for 199 men and boys, are not nearly large enough to house the present staff which has increased to no fewer than 472.

Our impression of the completed building shows the handsome appearance of the premises brought about by the extension. The additions will be built partly in Barton Street and partly on the site of old property in Cherry Lane which has been demolished, and an admirable street improvement is involved in the scheme.

When completed the building will extend from Cherry Lane to St. James' Barton. The alterations provide for increased workshop accommodation for the reconditioning of all types of gas apparatus for domestic and industrial purposes, and provision for larger stores and new offices.

The offices, which will occupy part of the first floor, will be entered from Barton Street. The three storeys of the building will be reached by mechanical lifts, while two loading docks will accommodate eight large lorries at the same time.

In this connection it is interesting to note that during the half-year ended Dec. 31 last, in delivering and collecting gas apparatus, the Company's vehicles travelled no fewer than 57,384 miles.

Testing is an important part of the activities at the workshops. Meters are tested by the latest methods to ensure accuracy, and all appliances are carefully tested before they are sent out to the public. Every care is taken to see that all the apparatus issued by the Company is fully efficient and also economical in its consumption of gas. The workshops on the ground floor will be capable of reconditioning over 100 pieces of apparatus per day.

Since 1926 the number of gas consumers in Bristol has increased from 81,550 to 116,000 at the end of 1934, while the number of cookers, on hire, has increased from 71,103 to 103,281. The total number of cooking and heating appliances sold or hire-purchased during 1934 was 18,182. Of this number 11,769 were enamelled cookers.

The increased accommodation will give greater scope for the activities of the industrial section which operates from these premises. This is the technical staff formed during 1933 to advise and assist the industrial and commercial users of gas in the selection and operation of their gas equipment.

During 1934, 2,118 visits were made to consumers in this class, and 261 orders were received for apparatus.

As many of the employees are cyclists, accommodation has been arranged at the new workshops for 130 cycles and motor-cycles.

A local newspaper, commenting upon the Bristol Gas Company's enterprise, remarks: "Bristol is notoriously ill-equipped with up-to-date offices, and this makes the Gas Company's endeavour to strike out in a new direction, in so far as the architecture of the building is concerned, all the more interesting.

Great attention has been paid to the natural lighting, ensuring the maximum of sunlight and air. At night the front of the building will be brilliantly illuminated.

The demolition of many drab and unsuitable buildings in the centre of the city has long been overdue, and one can only hope that the Gas Company's new premises will be the forerunner of many others."

Gas Undertakings' Results.

Omagh.

A loss of £140 was incurred in the operation of the Omagh Gas Undertaking for the year ended March 31, 1934. The Government auditor in his report says the prices charged to consumers varied from 3s. 4d. to 5s. 10d. per 1,000 c.ft., and that borrowing powers to the extent of £7,325 were exercised. The Council realized sinking fund investments which produced a sum of £10,232, of which £10,000 was utilized in paying off a portion of the sum borrowed for the purpose of purchasing the Gas Undertaking. There was an annual saving of £205 in the interest on the Gas-Works loan. The Ministry sanctioned a loan of £4,600 for improvements to the plant.

Perth (Australia).

The annual report and statement of accounts for the year ended Sept. 30, 1934, issued by the City of Perth Electricity and Gas Department, state that the gas sold shows an increase of 5·6% over last year's figures. The gas made per ton of coal carbonized averaged 17,410 c.ft., having a calorific value of 482 B.Th.U. The number of meters in use increased from 17,786 to 18,938 during the year. During 1933, the total receipts reached £421,463 and the gross profit amounted to £112,309, while during 1934 the figures were £445,729 and £112,223 respectively.

Diaries, Calendars, &c.

Further seasonable gifts in the form of diaries, calendars, &c., have been received from the undermentioned friends, whose good wishes are heartily reciprocated:

British Jeffrey-Diamond, Ltd., Wakefield.
Chancery Lane Printing Works, Ltd., Plough Court, E.C. 4.
Chemical Trade Journal and Chemical Engineer, 265, Strand, W.C. 2.
Clay Cross Company, Ltd., near Chesterfield.
Darien Press, Bristo Place, Edinburgh.
Manvers Main Collieries, Ltd., Sheffield.
Peckett & Sons, Ltd., Bristol.
Saml. Cutler & Sons, Ltd., 39, Victoria Street, S.W. 1.
W. C. Holmes & Co., Ltd., Huddersfield.

Gas Lighting—Its Position To-Day

The following is an extract from one of the series of lectures given to the fitters and staff of the Leamington Priors Gas Company. This one, by Mr. G. Sawyer, of Messrs. Wm. Sugg & Co., Ltd., deals with modern gas lighting practice.

For some time a big electrical push has been going on and this with considerable backing from powerful quarters. Present-day official attitude is nothing less than interference with legitimate commercial enterprise.

The Government has given the Electrical Industry an impetus which could not be obtained even by the expenditure of large sums of money on advertising. Great commercial centres have been urged to increase the use of electricity for all purposes. In street lighting contracts we are not getting a square deal. How far this will affect us will depend to a large extent upon our attitude as salesmen. I believe that with concentration of skilled energy we shall be able to surmount all prejudices and win through in the long run.

It will perhaps be profitable if for a few minutes we ask ourselves on what ground we can defend our position. The fact that our Industry has rendered reliable service for over 100 years cuts no ice in present-day competition. We must put that in the background for the moment and consider not so much what we have done, but what we are doing.

I believe that the nearer artificial light is to natural daylight the more perfect it is. Fortunately there is a method known to science by which the quality of light can be examined. It can be separated out showing its component parts. The method is known as spectrum analysis. You have seen the same effect produced by passing a ray of light through a prism.

Our competitors will probably say that purity with natural daylight is not of such great importance as I have indicated. Here are some rather pertinent questions for the consumer to decide. Mr. Shopkeeper: Are the goods displayed in your window approximately the same colour under artificial lighting as they are by daylight? In foggy weather are they reasonably visible? Mrs. Housewife: Are you happy about the colour rendering of your pictures, your decorations, and your dresses by artificial light? All artificial illumination which does not conform to natural daylight distorts colour.

I venture to say that the home using gas for lighting is brighter than that where electricity is used. Many of you have access to the homes of our consumers and you will bear me out that the average home using electricity uses from 60 to 100 watt lamps per room, whereas where gas is used the cluster of three No. 1 or No. 2 mantles is in general use. We need have no fear, therefore, of our ability to supply any standard of illumination that may be required.

Heating Value of Gas Lighting.

I wonder, too, in our gas lighting business if we are making the best possible use of the fact that for every cubic foot of gas consumed in a lighting burner about 97% of the heat is available for warming the apartment. For domestic, school, shop, warehouse, and, in fact, for all interior lighting the warming effect is appreciable. For every 10 c.ft. of gas used for lighting the heating effect is equal to that given off from an electric fire consuming over one unit per hour. Have you noticed that in some stores they occasionally make a special offer of supplying two articles for the price of one? Well, here is the same idea available from any gas undertaking and at any time.

Heat creates air turbulence which, of course, is the basis of ventilation. It must not be forgotten that air stagnation is definitely dangerous. A gas burner is as effective as a fan in creating air currents. Given a room with normal ventilating arrangements the air is cleaner, not only as ordinarily understood but bacteriologically.

In this connection it is as well to acquaint ourselves with the excellence of ventilating ceiling lights for this purpose. Far greater use should be made of this form of lighting. It is often difficult to obtain this class of work because of the inconvenience of running suitable flues. The ideal job is the one worked out in conjunction with the architect or builder during the erection of the premises. There are many applications of this class of work, and very good examples are to be seen at the new gas showrooms at Coventry in the verandah and also inside the showroom. A well-planned ventilating light will exhaust about 14,000 c.ft. of air per hour. Obviously with this interchange the apartment must be the purer.

Reliability of Gas.

Now for what is probably the strongest point in favour of gas lighting—its reliability. We may safely say that there is no method of artificial lighting which has such a reputation for trustworthy service as gas lighting. Many modern stores, places of amusement, &c., express their doubt of the reliability of electric lighting by installing a supplementary gas-lighting scheme. One has only to think of the dislocation of traffic, business, amusement, and hospital work which a failure of a lighting system entails to realize that there is good business to be obtained in this direction. The arcade lamp—one of our latest productions—promises to do much in this field of business. Where shops have electric lighting inside the windows this artistically-designed unit will provide an excellent supplementary lighting system when fitted outside the shop.

Very good business has been done in certain parts of the country by offering what is termed a cottage pendant consisting of a 3-light burner with hanging flakestone bowl, switch, and enamelled ceiling plate. These are offered at an attractive cash price or, if preferred, on an instalment basis. The result has been surprising. We must recognize that there must be many thousands of out-of-date gas fittings in use, and every opportunity should be seized and every inducement offered to get our consumers to bring their installations up-to-date. "Get up-to-date with Gas" is an excellent slogan for the lighting business.

Let us also remember that the consumer who regards gas as an ideal illuminant is the one to encourage in his belief, for he is the type to spread the good news to others. Gas lighting is not a subsidiary of the Gas Industry. Believe me when I say that it is forging its way ahead again into public favour.

Modernizing of Fittings.

We have modernized our fittings during recent years out of all recognition. It is true that the fitting is only the dress which the burner wears, but the whole has been built up to be part and parcel of the modern artistic scheme. In this connection we must render praise to the glass industry for the valuable assistance given. Modern glassware is definitely a thing of beauty; the colour schemes are remarkably good, the glass itself is not too absorbent and obstructs only a moderate amount of light, resulting in a perfect diffusion and adding to the charm of the lighting scheme.

We have not stood still in burner construction, and special efforts have been made to overcome the difficulty of soiled ceilings. Special deflectors have been designed, even with small domestic burners, which divert the currents more or less horizontally from the burner to ensure diffusion before reaching the ceiling. This is a definite advance, and one which does not reduce the general efficiency of the burner. The material, too, of which burners are made is designed to reduce tarnishing and discoloration to a minimum.

The designs of fittings have also been improved. All the old flimsy ornamentation has gone—dust collectors they were—and in their place we have plain and simple yet more effective designs than ever before. Rustless steel and chromium-plated metal are almost invariably used in good modern work.

Many designs of switches have been introduced during the last few years and many thousands are in regular use, giving every satisfaction. Still research goes on ever aiming at making gas lighting more and more attractive.

Calculating the Size of Unit Required.

The principal forms of illumination for interiors may be classified as direct, semi-indirect, and indirect, and their relative efficiency from an illumination point of view is roughly in the proportion of 2 : 1½ : 1. It is an easy matter

to calculate, too, the size of unit required for any desired standard illumination.

In practice I use a simple formula which allows for:

Direct lighting . . .	0·008 c.ft. per ft. candle per sq. ft.
Semi-indirect lighting .	0·012 ,, ,, ,, ,,
Indirect lighting . .	0·016 ,, ,, ,, ,,

For instance, a room 15 ft. square using direct lighting and an illumination of 4 foot-candles would require:

$$15 \times 15 \times 0{\cdot}008 \times 4 = 7{\cdot}2 \text{ c.ft.}$$

Semi-indirect

$$15 \times 15 \times 0{\cdot}012 \times 4 = 10{\cdot}8 \text{ c.ft.}$$

Indirect

$$15 \times 15 \times 0{\cdot}016 \times 4 = 14{\cdot}4 \text{ c.ft.}$$

Illumination is a science—rule of thumb methods have gone, and every help should be given to our consumers to plan their lighting on a scientific basis.

Another important side of our business is that of floodlighting, and it is here that all the true virtues of gas lighting are utilized. Where true colour rendering is aimed at, as in such work as the floodlighting of public parks, floral fêtes, and gardens, gas lighting has no equal.

Mr. Sawyer completed his lecture by showing lantern slides illustrating the development of lighting fittings from the very earliest days to the present time, and he described the particular purpose for which the various lamps and burners were intended.

UNDER THE LENS

By Quidnunc

Windows That Ruin Showrooms

Hardly a week passes without the opening of a new gas showroom. A dozen have been opened in the last three months. At Bristol, behind a screen of scaffolding, the old showrooms are being transformed into the most modern in the Kingdom, and the local Press attests the patriotic interest of the citizens in their Company's enterprise. And all of us have admired and envied the magnificent showrooms projected by the Liverpool Gas Company.

All this activity is symptomatic of the Gas Industry's resolve to vie with other traders for the favour of the public. Sir David Milne-Watson has told us that the public is a woman; and the public must be courted like a woman, with a due regard for appearance. Hence the progressive smartening of our showrooms, some of which are as well designed and inviting as the best stores in the country.

Yet there are times when I look into gas showroom windows and wonder whether all the money has been spent to no avail. There are window displays which shake one's faith in the modernity of the Gas Industry's outlook. The whole effect of a fine new showroom can be destroyed at a blow by a tawdry, inept, or tasteless window display. It is like a man in a very good suit of clothes who has forgotten to put on a collar and tie, the result being an unfavourable impression of neglect or eccentricity.

In one way, of course, gas window displays have improved very considerably. Nowadays one seldom sees the serried rows of appliances which suggested a well-kept graveyard. But there is still in several quarters a fixed idea that any display which makes people stop and look is *ipso facto* a good display, quite apart from its value as a piece of salesmanship. Given a large window and quantities of plywood, crêpe paper, chromium strip, and so on, any handyman could contrive a display sufficiently topical or ludicrous to make people stop and stare, and draw all the urchins of the neighbourhood to flatten their noses against the glass. The manager of a large store told me that at the time of the recent Royal Wedding he staged a display of an ordinary wedding, complete with bride, attendants, pages, and parson. The crowd on the pavement had to be moved on by policemen; but sales went down until the display was removed.

Cutting Out the Cut-out.

I hasten to say that this display was not in a gas showroom window. Nevertheless the desire to be topical, humorous, or spectacular sometimes leads gas displaymen into frolics which do nothing to further sales. In addition, the Gas Industry seems to be peculiarly susceptible to the cut-out display. Cut-outs have many uses. Indeed, they are the oldest form of display, being traditional at country fairs as a method of luring yokels into the booths of the Human Hairpin and the Pigfaced Lady. Also, the cut-out convention lends itself to fantastic invention, and as cut-outs are exceptionally easy and cheap to produce, they are universally used at special times like Christmas—a children's festival when everybody is prepared to be amused even by false noses, balloons, and paper caps. The cut-out, like the pantomime, is a survival from the past; and like the pantomime, it still has its seasons.

But as a method of all-the-year-round display, the cut-out is outmoded. Walk down the main shopping streets of any large town and give yourself a penny for every cut-out you see in a smart shop at a normal time of the year. At the end of your stroll you will be lucky if you can jingle two coppers together.

Now the sales policy of the Gas Industry has been to put itself in the forefront of shopkeepers. By its grand new showrooms, its salesmanship courses, its splendidly finished appliances, it has challenged comparison with the most up-to-date traders; and its achievements in the way of display must therefore be judged by the highest contemporary standards. By these standards, much of our window display is ill-planned and ineffective. It does not carry out its proper job of selling; it does not even serve as "reminder" advertising. No amount of punning humour or slick topical links can redeem a display which has not been carefully thought out; no amount of chromium strip, genuine cloth, and metal paper can turn a cheap cut-out into a strong piece of salesmanship.

A Question of Background.

The danger of inferior window displays is that they give the impression of an inferior industry, lacking in imagination and in knowledge of the consumer's needs. Who would be eager to patronize a furniture shop which showed cut-out figures sitting on the chairs or lying in the beds? Yet the Gas Industry, selling the most essential furniture of the house, unhesitatingly displays single-plane plywood figures among genuine appliances.

In last week's "GAS JOURNAL" an independent display expert indicated the true line of approach—the line most helpful to the consumer. This gentleman, having been asked how he would arrange a gas appliance display, "admitted the difficulties . . . and suggested settings similar to those in which the articles would be used. It was out of the question making mass displays. The appropriateness of the background had to receive special consideration."

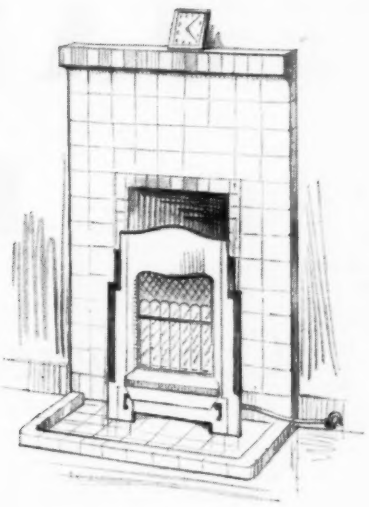
It is from this point of view that the model kitchen displays which some undertakings have arranged in conjunction with the makers of domestic equipment are worthy of study. Every woman is intrigued to see gas appliances arranged in a perfectly-planned and beautifully-equipped kitchen. Instantly she visualizes her own kitchen, and begins a rapid process of comparison in which the superiority of modern gas appliances is emphasized to the point at which her acquisitive instinct is stirred.

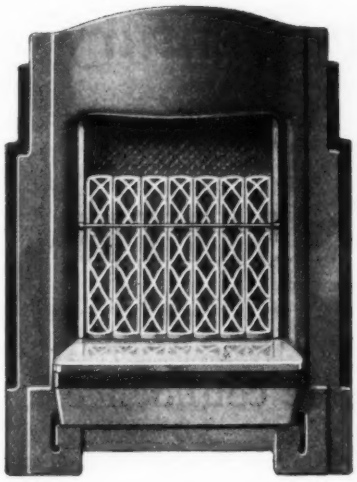
This does not apply to kitchens alone. Other rooms, too, can be illustrated in the window, without the need of hiring expensive furniture. In many cases the force of suggestion is far more effective than calculated realism. A few careful touches may do the trick—as in a showroom window which I saw where a deep armchair and a pair of slippers were placed in front of a warmly glowing gas fire. A small window showed a clear cold sky outside. It was as simple as it could possibly be, yet it was more telling than volumes of leaflets on healthy warmth.

There are occasions, of course, when it is desirable to introduce a figure. It is always best in such cases to have a first-rate model. There are many of these on the market. They cost more initially than cut-outs, but they last far longer. And they *must* be first-rate and able to stand comparison with the best that can be seen in women's shops. Perhaps the B.C.G.A. might break the ice by acquiring models which could be hired out to members. The suggestion may not be practicable, but I offer it for what it is worth.

I have often heard it said, as an excuse for feeble window shows, that the gas displayman is severely limited in comparison with the electrician; he cannot get spectacular lighting effects and mechanical eye-catchers. I maintain that gas displays can be as arresting, sales-making, and æsthetically satisfying as any other displays if only we will use imagination and care and a little more money upon them; and the achievements of several well-known gas undertakings are good enough to prove my contention.

The Ideal Gas-Fire where occasional heating is required





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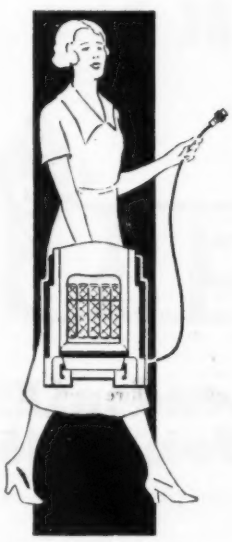

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Looking Ahead

by
STEPHEN LACEY,
B.Sc.

In his capacity of Junior Vice-President of the Institution of Gas Engineers, Mr. Stephen Lacey, of the Gas Light and Coke Company, addressed a joint meeting of the Scottish Junior Gas Association at Glasgow on Jan. 12.

When Mr. Campbell asked me to give a title to what I proposed to say, suggesting as possibilities "Future of the Gas Industry" or "What prospects the Industry holds for the Young Man of To-Day," I finally, after a long interval, I am ashamed to say, decided upon "LOOKING AHEAD," because that is obviously what we should all be doing, and such a title seemed to leave me free to say what I liked when the time came.

During the Christmas holiday I tried to get a picture of what the members of your Association are doing and thinking, by looking through the copy of your Joint Transactions for 1930-31, which Mr. Campbell kindly sent me as a guide. This excellent record of your Proceedings, covering as it does many of the burning gas questions of the day, showed me that "Juniors" in Scotland, like their colleagues in England, are wide awake, enthusiastic, and loyal to the Industry they serve. And I was not surprised, when reading the Papers and Discussions, to find myself traversing very familiar ground—because the truth is that the problems facing the Gas Industry in Scotland in these days are essentially the same as in England and the world over.

Throughout the world the Gas Industry of to-day has no monopoly in any field of utilization, and in common with all other competitive businesses its very existence depends, in the long run, upon the skilful and consistent conduct of a well conceived commercial policy. The many technical problems of manufacture, distribution, and utilization must not, of course, be neglected. Quite the contrary. But further progress in that direction would be of no avail if the Gas Industry failed to keep abreast of the time in the science and art of sales, service, and publicity. That is no longer a matter of opinion. It is a statement of fact that must be frankly accepted and acted upon if the Industry is to hold its own and make further progress. But time flies, and I wish it could truthfully be said that the remarks made four years ago by the then President of your Western District, Mr. Melvin, were out of date to-day throughout Scotland and England.

Jogging Along.

In opening the Discussion on an excellent Paper by Mr. Ronald B. Glover entitled "The Future of the Gas Industry—Distribution, Service, and Salesmanship," Mr. Melvin said there could be no question that some gas companies and may local authorities had not yet realized their potentialities, and seemed quite content to go jogging along provided they were holding their own. This was frequently shown in their lack of encouragement to their staffs, and the lack of inducement offered to attract competent men to the Industry. The efforts of the electrical people to secure business were undoubtedly prompting the Gas Industry to sit up and take notice. The electrical people had a great advantage in that electricity had been dubbed "fashionable." To fight fashion required a stiff struggle.

Mr. Melvin was obviously speaking with knowledge and feeling, and I found myself heartily endorsing the record of what he said because there can be no doubt that gas undertakings jogging along in the old way will certainly come to grief in the long run—and in some cases in a surprisingly short run—unless they come into line and join forces with those determined that gas shall keep its proper place among the fuel industries now and in the future.

And the worst of it is that when a gas undertaking, however small, fails in its service to the public and in holding its own against competition the loss of prestige extends far beyond the limits of its own area of supply.

It may be thought that I am barking up the wrong tree this afternoon when urging the need for co-operation and better co-ordinated effort, because Juniors can do little about it anyway; but, on the other hand, Juniors naturally and properly look ahead in their own interests, and the more accurate the picture they have in their minds of the needs of the Industry and the general trend of events, the better able they should be to fit themselves for positions of greater responsibility in the future. The Gas Industry as a whole is in a transitional stage of re-organization and re-orientation of management outlook. That is a state of affairs that must lead to opportunities for young men with the right sort of training and mental equipment; and to those who are looking ahead and trying to fit themselves for the future I would say—"Take full advantage of the many facilities that exist for technical education, but don't allow the acquisition of technical knowledge to narrow your outlook and make you relatively insensitive to the commercial view of things."

A Variety of Functions.

That applies especially to those who serve the smaller undertakings, and look forward to becoming engineers and managers, because in such circumstances one and the same man has to perform a great variety of functions of which sales and service management is perhaps the most important to-day. It requires a versatile and quick witted man to develop and exercise the qualities of engineer and salesman at the same time, for the engineering and sales temperaments are very different. Where the manager of an undertaking is primarily an engineer—and in the smaller undertakings it is usually so—his natural inclination is to pay most attention to production and distribution. In large undertakings the proper harmonizing of the engineering and sales points of view can be more easily effected, because they are represented by two different men.

That the Gas Industry in this country should be stronger on the engineering than the commercial side has followed naturally and almost inevitably on its past history—and if confirmation is sought, it can easily be found in the observations of friendly critics. Let me quote, for example, from a straightforward and friendly article written by Mr. Stanley Jenks, of Indiana, U.S.A., and published in the "GAS JOURNAL" of Oct. 31, 1934.

This is what he said:

> "While realizing that our Industry's fundamentals on both sides of the Atlantic are identical, I am well aware that every public utility's operating and sales problems are local and call for local treatment. The balance-sheet is the only final answer in deciding whether this or that is right or wrong. Even in my own group of companies, where, comparatively speaking, we are serving a compact number of communities, we find it advantageous to modify our operating and sales plans for local conditions, despite the fact that we have standard policies throughout the group. No, Sir! Sauce for the goose is not necessarily sauce for the gander in this intricate business of serving the public, and, accordingly, I was not particularly perturbed because of an almost chaotic lack of uniformity in British gas sales plans. What did amaze me, though, was the total lack of any sales plans at all in so many of the undertakings that I visited.
>
> It soon became apparent to me—and this is one of the outstanding impressions that remains with me—sales were suffering through engineering domination. Please get me right. Don't put me down as just another salesman throwing his weight around. The engineer is entitled to a major position in this Industry, but primarily as an engineer and not as a sales executive, unless he is just as well qualified and experienced in the technique of salesmanship as he is in the technique of engineering. The mental processes of an engineer and a salesman are so different that it is very rarely that one meets both in one and the same man. I guess I could count on my fingers the number of men I have met in the gas business who were adequately qualified to generate and distribute the gas and then go out and sell it. Creating new markets for the sale of gas and developing further uses for it in present markets is a highly technical job. I friendlily comment that the British Gas Industry, generally speaking, has failed so far to appreciate this fact. Increasing competition for the fuel market, I predict, will speed the discovery."

Perhaps I may be allowed to cap that with a quotation from your poet, Burns:

"O wad some power the giftie gie us
To see oursels as others see us."

Combating Competition.

And now, getting down to brass tacks, I will try to interest you in a brief account of the affairs of the Company I serve, and especially in what we are doing to combat increasing competition by introducing more enterprising sales methods and, at the same time, improving our service to the customer.

I come, as you know, from London, and am with the Gas Light and Coke Company, which serves more than fourteen hundred thousand consumers—a greater number than any other undertaking in the world, I believe. The large scale of our operations renders possible, indeed makes necessary, a far greater specialization of function than is usual; but after making allowances for that fact, which helps in some respects but is not an unmixed blessing, you will see that the problems we face are similar to yours and that we are adopting very much the same methods as other gas undertakings in the country that are looking ahead.

Thanks to the foresight of our Directors, we are in a very strong position as regards gas manufacture and distribution. Since the war our works have been largely reconstructed and such additions made as to provide a substantial margin over and above present day maximum requirements. Production costs have been reduced; great refinements made as regards uniformity of calorific value and specific gravity; naphthalene and water have been eliminated and sulphur reduced to about 10 grains per 100 c.ft. at several of the works. In fact, except for gum trouble, which appears to have arisen out of striving after perfection and has yet to be reckoned with, the sales and service side of the organization has nothing much to complain of—though, of course, we are never satisfied.

The same is largely true so far as distribution is concerned. Our 13 works are interconnected by high-pressure mains, which, supplemented by feeder mains throughout the area of supply, maintain, via many underground governors with automatic time clock regulation of pressure to compensate for variations in demand, a degree of uniformity of pressure that would have been considered impracticable not many years ago.

All that is to the good, because on those foundations are based all the work in connection with sales and service to the consumer which to-day make such great demands upon the time and energy of the management as well as that of the sales and service personnel. I bracket sales and service together because we fully realize their interdependence and always bear in mind when introducing new sales methods that, in the long run, their success depends on good service.

Perhaps I ought to define what I mean by "service" because the word has become hackneyed, and is sometimes made to appear pretentious. Service given by a gas undertaking involves such things as the care in the selection of gas appliances sold to the public, having regard to thermal efficiency, safety, and cost; the proper installation of those appliances and the pipes that supply them; the provision of the best possible facilities for the maintenance of installed appliances in good working order; the prompt execution of orders and attention to complaints, &c. These are tangible aspects of service calling for technical skill and conscientious workmanship. And then in addition, and no less important, are the intangible aspects of service involving courtesy and proper consideration of the consumers' point of view in all dealings with them—in fact, everything that leads to and maintains good relations between the gas undertaking and the public it serves.

Watson House.

The service side of our organization has been gradually developed over a long period, and though we seek greater efficiency and reduced cost, no radical change appears to be necessary. For the technical direction we rely upon the personnel at "Watson House"—a building named after the Governor of the Company, Sir David Milne-Watson—in which is carried out gas utilization research, the testing of appliances and fittings used in their installation, the training of foremen and fitters, &c. Incidentally, the building also houses the Industrial Gas Centre which serves between 70 and 80 subscribing gas undertakings in addition to the Company. The backing of Watson House makes progressive improvement in our service to the customer relatively easy and gives invaluable support to sales planning and execution.

Now the most obvious way of increasing the sale of gas is to facilitate the sale of appliances, and the best way of doing that is to make the terms of payment as easy as possible. Our present practice in that respect is to offer all approved appliances on hire purchase over a period of years—five for major appliances—and to include in the quarterly payments for ordinary consumers, and in the collection payments for prepayment consumers, the charges for fixing, which are at schedule rates as far as possible. The charges for fixing of appliances on simple hire are spread over two years, the minimum term of the agreement, and merged with the hire rentals.

And here I may say that with the object of interesting large stores, builders, and decorators in the sale of gas appliances we have recently launched successfully a scheme by which we provide the stores, &c., with a free display of appliances and pay them a commission on all appliances they sell on our behalf—half commission being paid when they introduce the business and we conclude it. We finance the business, deliver and fix the appliances ordered, and do everything possible, in fact, to relieve the authorized dealer of trouble and responsibility.

The scheme is still in the development stage, and it is perhaps too soon to say that the co-operation is firmly established. But we are confident of being right in trying to make allies of those who can help in the display and sale of gas appliances and have no doubt that the scheme will prove to be successful, and benefit both our authorized dealers and ourselves.

Perhaps you will be interested to hear what our American friend, Mr. Stanley Jenks, had to say about this subject in the article from which I have already quoted.

> "In the United States, facing the most intense competition in our history, we have felt it good business to enlist the support of every dealer who could possibly be interested in the sale of good gas appliances as a part of his regular business. Hardware, furniture, and appliance dealers were lined up particularly in the gas range field. Plumbers and heating contractors were encouraged to sell water heaters, partial and central heating equipment. We felt that the more people who were profitably occupied selling gas equipment, the stronger our sales effort would be, that more gas appliances would be sold, and we, primarily interested in the more extensive use of gas, would be the big gainer. It should be admitted that we had apparently a more fertile field to cultivate. Our dealers are a different proposition entirely from yours. And that probably explains why I saw nothing of such dealer co-operation in the sale of appliances in this country. It is a subject on which I would not care to comment without being in full possession of the economics. For there would have to be some sacrifices in merchandizing volume and some compromises and adjustments in merchandizing methods before the dealer could be induced to go into the appliance business alongside you at a profit. One undertaking bragged to me that it had a 'sole agency' contract with some distributor, entitling it to a longer discount, and enabling it to whip all potential competition (and it didn't mean electric, coal, or oil, either). Another admitted that it sold at retail with a mark-up over invoice cost of 10%, which anybody knows is not enough to pay its direct sales expense. No dealers, of course, can survive such competition."

Gas Appliances.

Now for a few words about the gas appliances themselves. We have had to face the fact that a great part of the appliances on the district—cookers, fires, and water heaters—are rapidly becoming obsolete, if not obsolete already. Not because they are thermally inefficient or physically worn out, but because they will not bear comparison as regards appearance and ease of cleaning with what can be seen in any up-to-date showroom. Vitreous enamel, chromium plate, and heat-resisting paint finishes combined with new standards of home equipment have exposed most existing appliances to the risk of being displaced by our competitors, not, as I have said, because the appliances are not doing their job efficiently, but because they are old-fashioned.

The simple truth is that we cannot afford to have old-fashioned appliances on the district. And therefore we are setting about the job of displacing them ourselves as quickly as possible. That is the sort of job that calls for sales planning including, among other things, the working out of attractive terms, advertising, showroom displays, and the encouragement of enthusiastic selling.

The mention of enthusiastic selling leads me to say that we have come to the conclusion that, for the great majority of salesmen remuneration must bear some relation to the results achieved if they are to do their best. And further, that everyone employed in a gas undertaking, whether

professional salesmen or not, can help, and help very materially, if encouraged to do so.

During last year my Company introduced a Prospect Card scheme—we were not by any means the first to do so—by which "prospects" given by employees (excluding salesmen in showrooms or on their own districts) and leading to business within a specified time entitled employees to a small commission. The success of the scheme has exceeded expectations, and, thanks to careful forethought and proper organization, works very smoothly.

At the same time that we are encouraging everyone in the Company to provide leads for the regular salesman we are doing everything possible to relieve the regular salesman of clerical and service work, so that he can spend practically all his time doing productive sales work on the district.

Technical Knowledge.

Domestic sales work requires a thorough but not very deep or extensive technical knowledge, and no enterprising undertaking, however small, should experience difficulty in finding suitable men for this work. They must, of course, be of the right type and properly trained. But the conditions are different when we come to commercial and industrial sales. For that work, the salesman must have a considerable and specialized technical knowledge and a wider field of experience than can possibly be provided within the limits of any but the largest undertakings.

One of the chief objects of setting up the National Scheme of Regional Industrial Centres was to overcome this difficulty, and I am glad to say that invaluable help is being rendered to the smaller undertakings in districts where a properly equipped and well run Centre exists.

If progress is measured in terms of total gas output, the Gas Industry is not doing so badly in the face of competition, especially having regard to the losses due to the substitution of modern for less efficient appliances; but if we take consumption per consumer as a criterion, the prospect is not so good. Therefore, we are always thinking of ways and means of getting existing consumers to use more gas. Speaking broadly, this can be done in two ways—by persuading people to use gas for more purposes, and by offering terms which will encourage people to use the appliances they have more fully and to install *more*.

We all know that there are many purposes for which gas can be used more fully than at present. For example, there are great possibilities in domestic water heating—a load which, as compared with central heating, has the great advantage of a good seasonal load factor.

There are, however, two promising loads often neglected that I should like to mention. The first is refrigeration, which we in the Gas Light and Coke Company are taking seriously. Last year we sold refrigerators to the value of tens of thousands of pounds, and we shall do much better this year. I recognize, of course, that in Scotland the conditions for refrigeration are less favourable than in England where the conditions, in turn, are much less favourable than in the U.S.A. where remarkable success has been won; but I am confident that the demand for refrigeration will grow even as far north as this, and that gas should have its full share in the business.

The other potential but undeveloped load I have in mind is the use of gas for igniting coke and coal fires. Most gas undertakings have to recognize the fact that they cannot, under present conditions, sell gas for domestic heating at a price that will compete with solid fuel for continuous use—except where labour-saving is an important factor and the consumer can afford to pay for it. That is why we are going out to sell gas-ignited coke fires, of which there are several on the market, one at least incorporating a gas fire for intermittent use. We sell these fires installed complete at schedule rates on hire purchase terms, including a plug-in connection to which can be attached a portable fire that can be placed on the hearth when intermittent heating is required. We are great believers in the future of the gas and coke combination for local and central space heating and for domestic water heating.

Discussion.

Mr. J. Greig (the President of the Western District), in opening the discussion, said that it was the custom of the Scottish Juniors to invite the Junior Vice-President of the Institution to speak to them, and Mr. Lacey, in his address, had more than upheld the high standard set by his predecessors. There were many features of importance in the sale of gas appliances, but, he felt, that, in Scotland, there was a feeling that the hire purchase system was immoral—that it was not right to receive something which had not been paid for. He was interested in the displays which had been made in large stores, and he thought that this was an attractive means of presenting new appliances to the public. He did not think refrigerators were a luxury; and, though the price was somewhat high, he thought that the Industry was inclined to underestimate the capacity of the public to pay for refrigerators. He agreed that sales and servicing was a specialized job and that the duties of an engineer and salesman should be kept apart. This was the rule in other industries, the maker of sewing machines did not sell them. He wondered if the utilization of gas for lighting coke fires meant that there was no hope of displacing these coke fires by gas. On the subject of tariffs Mr. Greig said that care had to be taken in drawing up a two-part tariff, as some consumers did not like having to pay a big bill for the first period, even if the accounts for the succeeding periods were small.

Mr. Smith (Dunfermline) said that in Dunfermline a petition for the installation of electricity had been signed by the tenants of a new housing scheme, and on talking to some of them he had found that they did not want electric light particularly but wanted to be able to run all-mains wireless sets. In large undertakings, he said, it was possible to have separate men to control the engineering and sales sides, but in small concerns this was not always possible. He was interested to hear that Mr. Lacey charged for fitting on a scheduled rate, as he had found it better to hide the fitting cost in the actual charge. Had Mr. Lacey tried renovating the black cookers which he replaced with more modern ones, and could he give any idea of the charge made for renovating? When in Dunfermline they introduced their scale of charges for gas, criticism was levelled that the poorer consumer would suffer. When the scale was altered recently he had made a survey and found that the poorer consumers did not suffer, as these were not necessarily the smallest consumers. Another calculation which he had made proved that a gas poker was actually cheaper than using sticks, and though the saving in using a poker was not great, it was ever so much more convenient.

Too Much Concerned with Cheapness.

Mr. Lacey, in reply, said that he had been amused at the remark about hire purchase, and though the same feeling existed to some extent in England the fact remained that it was the only way to sell appliances. The displays in stores had been very successful. An exhibition had been held in Harrod's for six weeks and demonstrations in cookery were given. One of the difficulties with refrigerators was to introduce them to the public and let them find out how convenient they were. The flats now being erected in London were being fitted with refrigerators as standard equipment. He criticized the Gas Industry as being too much concerned with cheapness, being too much inclined to offer the cheapest article first. Of course, it was bad policy to attempt to sell people things which they could not afford; but he thought that the Industry had gone to the other extreme. In small undertakings the engineer must attend to sales and servicing, and there was no reason why an engineer should not become a good salesman. He did, however, wish to warn young men against becoming too interested in technical details and neglecting the commercial aspects of the Industry.

With regard to the fitting of coke fires they were, of course, careful to avoid fitting these where there was any possibility of installing gas fires. They were not fitted in any room which was used intermittently; for every 100 coke fires installed only ten replaced gas fires, and those were generally on account of the fires having been used continuously and having proved too expensive. In these cases it was better to get coke fires with gas ignition and provision for a portable gas fire. He was surprised to hear that two-part tariffs were unpopular. They were almost universal in England and had been accepted by the public. The Gas Light and Coke Company had two tariffs, one for industrial users and another for caterers. The rate in the latter case was not so low as in the former because the competition was not so keen. He did not think that one block met the requirements of the small consumer. The electrical industry benefited because their standing charges varied with the size of the house, and he thought that this ought to be the case in the Gas Industry also.

In the field of domestic lighting he considered that they should endeavour to retain at least one burner, particularly that in the living room, in houses which had gone over to electricity. They renovated all their hired appliances, but he doubted if it was advisable to doctor up old stoves. Heat resisting paints were only successful in cases where they were not subjected to abrasion. Fires, however, could be completely transformed by being tastefully coloured. Another important point in connection with cookers was that they should be fitted with thermostatic control, which was one of the great advantages which gas had over electricity.

Mr. A. C. Rea (Secretary of the Eastern District) asked if Mr. Lacey had had any trouble with clock controls on district governors. In Edinburgh, where they had an interlinked system, trouble had been caused by the back-pressure exerted by one clock affecting the other governors. He was also interested in the substitution of the name "district salesman" for "inspector." He inquired what were the exact duties of these district salesmen. He also suggested that the homes of those connected with the Gas Industry should be gas showrooms, and undertakings should assist their employees in this respect by granting them some concessions in gas and coke.

Mr. Lacey said that two types of clock governors were used, but these were situated so far apart that they had no influence on each other. The old inspector used to be a local manager

who attended to complaints, controlled the fitters, and did what selling he could. Men were now being relieved of these other duties and were concentrating on the sales side. The Industry must take the initiative; it was no use sitting down and waiting for orders.

Mr. MACFARLANE (Glasgow) said that their electrical competitors had organized a Women's Electrical Association in which well-known women participated and gave demonstrations. Surely the Gas Industry could do something similar. The scheme whereby all workers had an interest in the sales they made had been discussed in Glasgow before, but the majority of the undertakings in Scotland were under municipal control, so that such a scheme as Mr. Lacey's prospect cards, while excellent, was not practicable.

Mr. LACEY said that it was the intention of the National organizations to establish a Women's Gas Association, but it was difficult to get the right people. With the prospect cards the extra remuneration was not the most important point. The competitive spirit introduced was good, and it also showed which men were working well. There was no reason why municipal undertakings should not introduce this scheme, and it would provide opportunities for discovering latent talent.

Mr. A. BUJNOWSKI (Glasgow) asked if Mr. Lacey could give him any information regarding selling costs. He also inquired how the value of a salesman could be assessed. This he had found to be a difficult matter, as the number of appliances sold was not necessarily a good criterion. The salesman on the industrial side might not sell any appliances and yet be responsible for a big increase in the output of gas. Refrigerators, he said, were expensive, and he wondered if a refrigerating unit could not be fitted in existing larders.

Mr. LACEY replied that the assessing of salesmen was difficult. He should have made it clear that commission was paid only on the domestic sales side. It could not be done on the industrial side. Even in the domestic field comparison was difficult because of the differences in districts. The actual cost of selling included so many factors that it was difficult to estimate.

Mr. J. M. DOW (Kirkcaldy) said that he was sorry that Mr. Lacey had not dealt with tariffs more fully. What was the use, he asked, of supplying the gas without supplying the price? No one had a better chance of pushing hire purchase sales than gas salesmen, especially in the case of prepayment consumers. He asked if Mr. Lacey had had any experience of a special tariff for the street lighting load, and commented that there was too great a divergence in the methods of charging for gas and electricity. On the present system it was difficult to explain the relative costs to a layman.

Mr. LACEY said that in his district there were about 50 different public lighting authorities. No general tariff was offered, as each case was fought on its own. The price of gas for public lighting must be lower than the flat rate. He agreed that the prepayment system was a great advantage, as the consumers could pay the instalments on the hire purchase out of the meter rebate.

Mr. D. FULTON (Helensburgh) advised the young men of the industry to take a wide view and to remember that remuneration was not everything—as a great amount of satisfaction was obtained from a job well done. Small undertakings, he thought, rather overstressed the cost of selling personnel. The provision of a showroom was not sufficient, it was necessary to go out among the consumers and seek business. They must realize that the selling price of the gas was not everything, and the fear of the extra cost due to sales staff was not justified. Having to increase the price of gas by 1d. due to empolyment of salesmen to increase the output was better than having to increase the price due to decreased output. The young men had great possibilities in front of them, since they could spur on the older members by bringing forward their ideas.

Mr. G. BRAIDWOOD (Coatbridge), in proposing a vote of thanks to Mr. Lacey, advised the members to think in terms of therms and not in terms of cubic feet. He complimented Mr. Lacey on the excellence of his address.

A vote of thanks to the Chairman, Mr. Greig, was carried on the proposition of Mr. SMITH.

Midland Junior Association Visit Nottingham

On Jan. 3 the Midland Junior Gas Association visited the Woodborough Road Distribution Department of the Nottingham Gas Department, where they witnessed the renovation of cookers, paint-spraying, and afterwards inspected several central heating units in the City.

By the courtesy of the Gas Committee, the visitors were entertained at tea at Messrs. Boots' Café, following which a meeting was held.

Mr. J. H. WAINWRIGHT (the President) said it was not often the Association held a meeting outside Birmingham, and they were very pleased to have the opportunity of coming to Nottingham, particularly in view of the installations they had been able to inspect. He offered a very cordial welcome to the meeting to Mr. R. W. Wilkinson, the Deputy-Engineer of the Nottingham Gas Department.

Mr. WILKINSON said it gave him much pleasure to welcome the visitors to Nottingham. He expressed regret on behalf of the Chairman (Sir Henry Ball) for his inability to be present, and also for the absence of Mr. George Dixon (the Engineer and Manager), who had been called away to an important meeting. This was the first occasion on which the Juniors had visited Nottingham, and he trusted they had had an enjoyable afternoon and that at no distant date they would have the pleasure of seeing them again.

The PRESIDENT, in reply, said how fully the members had appreciated the warm welcome which had been accorded them and the opportunity which had been provided for seeing the very fine central heating installations. He understood that a number of the Heating and Ventilating Engineers of the City were present, and he extended to them a very hearty welcome to the meeting.

Mr. COLLARD (Distribution Superintendent, Nottingham) said how disappointed Mr. Dixon was at his enforced absence. He was not a figurehead but took a keen interest in all the activities. They were delighted to have with them members of the local Heating and Ventilating firms, and he hoped the occasion would further cement the cordial relations which already existed between them.

Referring to the method of dealing with stove renovation at Woodborough Road, he said under their new method they had increased the number of cookers dealt with by 50% and had saved £3,000 per year. The central heating load was one which they felt ought to be developed, and they had achieved a large measure of success in this direction.

Mr. W. L. HOWE (Industrial Development Engineer of the Nottingham Gas Department then read his paper entitled "Some Results Obtained with Central Heating Boilers," which was published in last week's "JOURNAL."

Discussion on Mr. Howe's Paper.

The PRESIDENT proposed a vote of thanks to the Engineer and Manager, the Deputy Engineer, and the Distribution Superintendent, and to Mr. Howe for his Paper. Not only the members of the Junior Association, but also the Heating and Ventilating Engineers of the City had something to which they could refer with confidence.

Mr. F. L. ATKIN (Birmingham), in seconding the vote of thanks, congratulated the Author upon his Paper. He was particularly impressed with the good relationship which existed between the Gas Department and the contractors. The Gas Industry was always prepared to back up the manufacturers of appliances to the fullest extent and give them the best possible service, and it was obvious from the three boilers fitted in the demonstration room at Woodborough Road that the manufacturers of these boilers had also given of their best. It was also necessary, of course, that the people who installed the boilers should see that their work was also up to standard. If boilers were installed in the best possible way, then the Gas Industry could be relied upon to give the heating contractors the whole of their business. There was no doubt that gas was the ideal fuel for central heating from all points of view. The whole thing hinged on the question of cost. Mr. Howe had given some good comparative figures, especially when it was remembered that he was comparing them with the thermal cost of a fuel much less than that of gas. The results had been achieved by thermostatic control, labour saving, &c. When compared with oil its thermal cost came very near to the oil figure. The difference was accounted for by the fact that gas-

fired boilers could show greater efficiency than oil-fired boilers. He referred to the stoker-fired boilers which were coming into the field, which meant that they would be faced with coal as a fuel which had a thermal cost of something under 1d. per therm. He asked Mr. Howe if he had considered the possibility of thermal storage. He thought that if supplies of gas could be taken during the night time it would help to cut down costs. If some method of storage could be devised, then gas undertakings would be in a position to sell their fuel at a low cost. He thought that future development would probably be along these lines.

Mechanical Stokers.

Mr. W. HIND (Coventry) regretted that no mention had been made of mechanical stokers for solid fuel, which was now becoming a serious competitor. These, however, had their disadvantages—namely, high initial cost, fuel storage space required, and inevitably a certain amount of dust and dirt. He asked Mr. Howe's opinion on the use of room thermostats. He had found that not only was the internal temperature of a building controlled by their use, but also the gas consumption. A disadvantage, however, of using such a thermostat was that the temperature of a whole building was controlled from one room only, and if, for example, windows were opened in that room, the boiler would heat other rooms which might already be at a satisfactory temperature.

With reference to the formula given in the Paper, at Coventry they had obtained good results in estimating running costs by using the figure of heat loss in B.Th.U./hr. from the building as a basis rather than the square feet of radiation multiplied by an emission figure of 140 B.Th.U./sq. ft. per hour. He cited the case of the Gosford Park Swimming Pool which, heated by a "Vesta" gas-fired boiler, had only consumed 2,000,000 c.ft. per annum for heating the bath, for tepid showers, and central heating of dressing rooms. This was a successful application of gas at a price of 5d. per therm.

Mr. HOWE, in reply, agreed that it was advantageous to fit a room thermostat in almost every case. It was obvious that the position for the instrument should be chosen with the utmost care so that it would be free from draughts and as far as possible reflect the true temperature of the whole building. He had found it advisable in the case of private houses to install the room thermostat in the hall.

Regarding the formula, he pointed out the radiating surface area × the B.Th.U. emission per square foot per hour was substantially the same as the figure of heat loss per hour from the building, except in cases where the radiating surface was greatly in excess of the actual requirements, when, of course, Mr. Hind's figure would be preferable. Fortunately, the heating engineers of Nottingham were well on top of their job, and no such case had yet occurred.

Condensation Troubles.

Mr. F. A. PYKETT (Coventry) took the opportunity of congratulating Mr. Collard on the marvellous re-organization which had taken place at the Woodborough Road Distribution Department. He asked whether any condensation troubles had been encountered on any of the installations. In Coventry they had found it advisable in some cases to fix salt glazed sewer pipes in the flues owing to the action of condensate. He also mentioned that they had had trouble with repercussions of pressure when a large Bonecourt installation shut off, and that this caused an increase of pressure in a series of oscillations right back to the station governor. It amounted to 3/10 in. and was a difficulty which they had not yet overcome. He wondered whether Mr. Collard had encountered the same trouble, and whether he could give any information on the matter.

Mr. COLLARD said he was glad of the opportunity of expressing his thanks to the Engineer and Gas Committee of the City of Nottingham Gas Department for the support and encouragement they had given him in connection with the re-organization of the Woodborough Road Department. While they all had ideas, he stated, it was not often that they are given a completely free hand to carry them out; and had it not been for the support and encouragement of the Management and the active co-operation of the staff, the scheme would not have reached its present state of perfection. He observed that while a 50% greater output of cookers was being obtained with the scheme, the saving per annum in running cost over the previous method amounted to no less than £3,000. Only 27 men were employed on cooker renovation, and the output was 288 cookers per week. It was hoped that before long that figure would be increased to 300. Regarding pressure repercussions due to the operation of large boiler plants, he could offer Mr. Pykett no information on the matter. So far, they had experienced no trouble in that direction.

Providing for Condensate.

Mr. HOWE, in reply to Mr. Pykett's question regarding condensation, stated that they had on some installations considerable trouble with condensation. In some cases it was practically impossible to overcome, and the only obvious thing to do was acknowledge that it did take place and make provision for it. In one particular case they had fixed the usual tee at the bottom of the "Everite" flue, and from this had led a small drain into a vessel to catch the condensate. This vessel was periodically emptied. Some boiler makers, notably the Vesta Boiler Company, expected condensation, due to the low flue gas temperature, and therefore high efficiency of the boiler, and made provision for it. This was an admirable way of looking at it, and he suggested that other boiler manufacturers would be well advised to make provision for those cases in which condensation did occur, rather than to say that no condensation would occur if the boiler were attached to an ideal flue. Ideal conditions were seldom attained in practice, and it would be better to make provision for those circumstances under which it was impossible to erect perfect flue arrangements.

Mr. HUGHES (Messrs. J. Hughes, Ltd., Nottingham, Heating and Ventilating Engineers) said he did not agree with the figure of 140 B.Th.U./sq. ft./hr. given in the formula for estimating running costs. The emission from radiators was approximately 160 B.Th.U./sq. ft./hr., while that from pipes was approximately 200 B.Th.U./sq. ft./hr. at normal flow temperatures of, say, 160° F. to 180° F. He therefore thought that a mean figure of 180 B.Th.U./ sq. ft./hr. should have been taken.

Mr. HOWE conceded this point to Mr. Hughes, and stated that he was not prepared to quarrel over this figure, as Mr. Hughes had had a considerably wider experience of piping systems than he had. He pointed out, however, that the formula was a more or less empirical one, and the only difference obtained by using the figure of 180 B.Th.U./sq. ft./hr. would be that the factor "C" would be slightly altered. He also pointed out that in house heating some form of auxiliary heat was generally employed, and the flow temperature at which the thermostat was set was often only in the region of 110° F. to 140° F.

Mr. KNEWSTUBB (Messrs. T. Danks, Ltd., Nottingham, Heating Engineers) thanked the City of Nottingham Gas Department and Mr. Howe, on behalf of the local members of the heating trade present, for the very pleasant and interesting visit and lecture. Like the Gas Department, the heating trade were out to give the public the best results whatever the fuel used. There was no doubt that in many situations central heating would be entirely out of the question were it not for the introduction of gas-fired boilers. The mechanical stoker was now coming forward as a serious competitor and could show economies in operation over gas and oil. It was, however, rather early to say anything about the cost of their upkeep. In any case, the day of hand firing was rapidly going, and the installations of the future would undoubtedly be completely automatic whether the fuel was gas, oil, or coal.

Regarding the criticism made by Mr. Hughes of a figure in the formula given in the Paper, he said that in many installations a proportion of the pipes was lagged, and, therefore, if the whole amount of piping were taken into account in the formula, he thought that the average B.Th.U. emission per square foot per hour taken over the whole surface would be not far away from the figure given by Mr. Howe.

Heating of Swimming Baths.

Mr. MEUNIER (Radiation Ltd.) inquired whether Mr. Howe could give information on the method by means of which it was proposed to heat the Highfields Open Air Bath, Nottingham.

Replying to Mr. Meunier, the CHAIRMAN said it was not possible to give the information, as the whole matter was still in the estimate stage, and he asked Mr. Hind (of Coventry) if he could give some information relating to the Gosford Park open air pool which was being heated by gas.

Mr. HIND stated that a "Vesta" boiler was used for heating, and the whole of the contents of the bath—200,000 gallons—was circulated through the boiler. The temperature rise was small owing to the speed at which the water was moving, and it was somewhat strange to feel the boiler and find that the shell was almost cold although the gas was full on. The temperature of the water at the initial heating came in at about 45° F., and this was raised to 70° F. The initial heating of the bath took about 24 hours. He was unable to give the gas consumption for the initial heating, but the total for the year, which included gas used for other heating services, was approximately 2 million c.ft.

They found that a small deposit was left after the boilers had been standing for a period, but most of this was moved when the water was again circulated. At the end of the season a certain amount of deposit had been found, but as the proprietors of the bath had been experimenting with various chemicals for cleaning the water, he was unable to say whether this was due to the chemicals or a deposit from the water.

Mr. PATTISON (Messrs. Vesta Boilers, Ltd.) stated that the water originally fed into the bath had been allowed to get into a very bad state, and the proprietors had made use of copper sulphate in order to try to purify the water. As was well-known, this had a chemical action on the boiler and iron piping, and left a deposit. This deposit had been removed and the use of copper sulphate discontinued.

Mr. WILKINSON expressed his pleasure at being able to welcome such a large gathering of the Association and of the local heating contractors. He mentioned that no Junior Association had met in Nottingham for 11 or 12 years, and hoped that that meeting would pave the way for further meetings in the district. He associated himself with the remarks made by Mr. Howe regarding the amicable relations existing between the Gas Undertaking and the heating engineers, and hoped that this spirit of co-operation would continue to their mutual interest and advantage.

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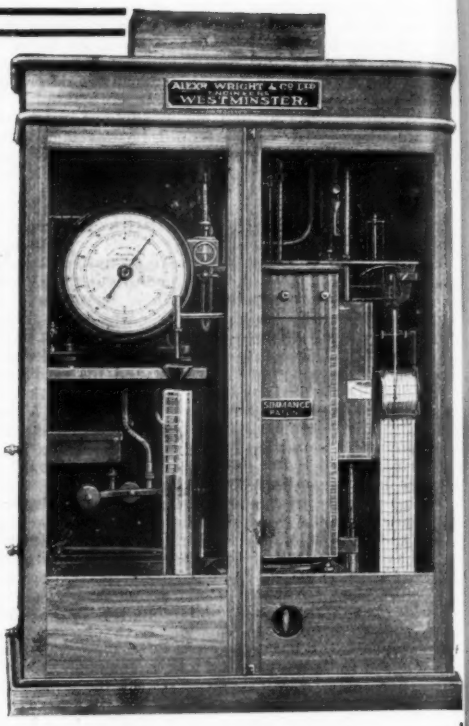

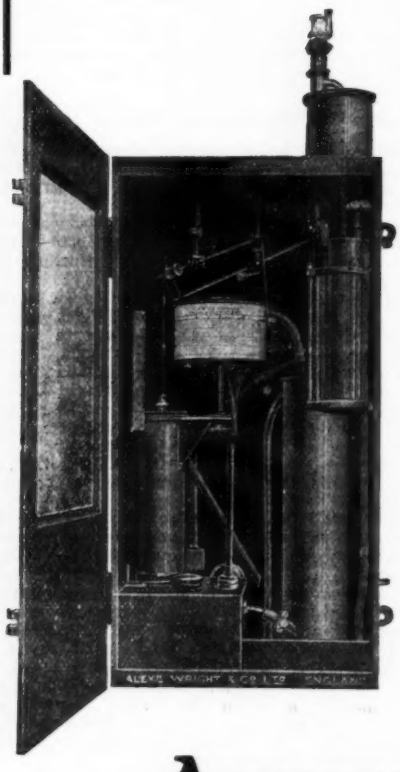

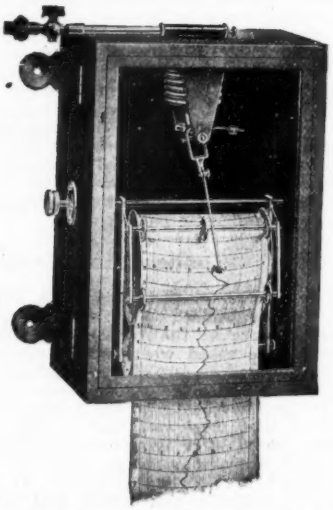

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Gas Markets and Manufactures

Stock Market Report.

[For Stock and Share List, see later page.]

The Stock Exchange has commenced the New Year in good style. A heavy volume of business was recorded last week and upward price movements were almost universal. Large parcels of gilt-edged stock changed hands, and though towards the close some profit-taking in these securities led to slight reaction, prices on the whole showed appreciation on last week's level. Another feature was the demand for coal, iron, and steel shares brought about by recent favourable reports, and several issues improved. All the leading banks have now published preliminary statements, and it is satisfactory to note that in each case profits are higher and the dividends maintained at the 1933 rates. New issues during the week were particularly successful; the loan raised by the Bristol Corporation of £2,835,000 2¾% stock at 99 being heavily oversubscribed in a few minutes.

The Gas market was no exception to the general activity, any stock coming into market being speedily absorbed. A big demand for debenture and preference stocks continues, and it will be seen in the Stock and Share List that several were marked up 2 or 3 points last week. Gas Light units also received strong support, and the prices of transactions hardened as the week progressed, though the quotation remained unchanged at 28s. 3d. South Metropolitan ordinary commenced to appreciate again and rose 1 to 149½, while (on the Nottingham Exchange) Derby consolidated gained 5 to 205.

The next item of interest to gas investors will be the publication of reports and dividends, many of which are due to appear within the next few weeks. It is reasonable to assume that most companies maintained a steady progress up to the end of November last, but the abnormally high temperatures during the whole of December were unfortunate, and, though in the majority of cases dividends will doubtless be maintained, a diminution in profits by some undertakings is not unlikely.

Current Sales of Gas Products.

The London Market for Tar Products.

LONDON, *Jan.* 14.

The values of tar products remain steady at the following figures:

Pitch, 46s. to 48s. per ton f.o.b.

Creosote, not less than 5d.

Refined tar, 4d. to 4¼d. per gallon in bulk at makers' works.

Pure toluole, 2s. 2d. to 2s. 3d.; pure benzole, 1s. 9d. to 1s. 10d.: 95/160 solvent naphtha, 1s. 7d.; and 90/160 pyridine, 6s. 3d to 6s. 6d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Jan. 14.

The average prices of gas-works products during the week were: Gas-works tar, 20s. 9d. to 25s. 9d. Pitch—East Coast, 45s. to 47s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 45s. to 47s. 6d.* Toluole, naked, North, 1s. 6d. to 1s. 8d. Coal-tar crude naphtha, in bulk, North, 6¾d. to 6⅞d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4½d. Heavy naphtha, North, 9⅜d. to 10¾d. Creosote, *ex* works, in bulk, North, liquid and salty, 3⅝d. to 3⅞d.; low gravity, 3⅝d. to 3⅞d.; Scotland, 3⅝d. to 3⅞d. Heavy oils in bulk, North, 3⅝d. to 4¼d. Carbolic acid, 60's, 1s. 8d. to 1s. 9d. Naphthalene, £10 to £11. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading osts and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Jan.* 12.

Creosote oil is firmer, but other products are unchanged on the week's trading.

Crude gas-works tar.—Actual value remains at 29s. to 31s. per ton *ex* works in bulk.

Pitch.—Little or no new business is being arranged, but makers are holding for 43s. to 44s. per ton, f.o.b. Glasgow for export and 42s. 6d. per ton f.o.r. works in bulk for home trade.

Refined tar remains quiet at 3d. to 3⅛d. per gallon, f.o.r. naked.

Creosote oil.—Production is well looked after, and to-day's prices are firmer both for prompt and forward. B.E.S.A. Specifications, 4d. to 4¼d. per gallon; low gravity, 4¼d. to 4⅜d. per gallon; and neutral oil, 4¼d. to 4⅜d. per gallon; all f.o.r. in bulk.

Cresylic acid.—Demand is not too brisk and prices are unchanged. Pale, 97/99%, is 1s. 2¼d. to 1s. 3½d. per gallon; dark, 97/99%, 1s. 0½d. to 1s. 1½d. per gallon; and pale, 99/100%, 1s. 4d. to 1s. 5d. per gallon; all *ex* works.

Crude naphtha is valued at round 4d. to 4½d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 3d. to 1s. 4d. per gallon and 90/190 heavy is about 9d. per gallon.

Motor benzole is obtainable at 1s. 3d. to 1s. 4d. per gallon for reasonable quantities.

Pyridine.—90/160 grade is 6s. to 6s. 6d. per gallon and 90/140 grade 6s. 6d. to 7s. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s. d.		s. d.	
Crude benzole	0 9	to	0 9½	per gallon at works
Motor ,,	1 3½	,,	1 4	,, ,, ,,
90% ,,	1 4	,,	1 4½	,, ,, ,,
Pure ,,	1 7½	,,	1 8	,, ,, ,,

Contracts Advertised To-Day.

Coal.

Caernarvon Gas Department. [p. 158.]

Cookers.

Port Talbot Gas Department. [p. 158.]

Overseas Opportunities.

The Commercial Counsellor to H.M. Embassy at Buenos Aires reports that the Argentine State Oilfields Directorate are calling for tenders, to be presented in Buenos Aires by Jan. 28, 1935, for the supply of 15,000 metres of seamless steel upset tubes for oil well service and 18,000 metres of black mild steel seamless tubes with socket joints. (Ref. G.Y. 14,630.)

H.M. Trade Commissioner at Johannesburg reports that the Johannesburg City Council are calling for tenders, to be presented in Johannesburg by Jan. 12, 1935, for the supply of brass stopcocks and bibcocks. The Council also invite tenders for the supply of galvanized pipe fittings screwed to British Standard thread and capable of standing a test pressure of 300 lbs. per square inch.

Trade Notes.

A New Pipe Catalogue.

The recently issued Pipe Catalogue of Messrs. Horseley Bridge & Thomas Piggott, Ltd., of Tipton, is not only an interesting but a very useful publication, containing some valuable tables and diagrams concerning lapwelded steel pipes, together with photographic illustrations of various important installations.

Book Matches for Publicity.

We have received from Messrs. R. Russell & Sons, Ltd., Peel Foundry, Derby, specimens of the "New Herald" Cooker and "Peveril" Gas Fire matches. A liberal supply of these matches, in an attractive showroom container, will be willingly forwarded, post free, to any gas showroom on application to the manufacturers.

"Hailware" Crystal Glass.

Messrs. Hailwood & Ackroyd, Ltd., Morley, have forwarded us an illustration of a set of cut glass tumblers and jug which have been designed and manufactured at their Morley Works. The set, cut to modern design in "Hailware" Crystal Glass, is a definite breakaway from the general style of this type of domestic glassware.

Manual of the "Newbridge" Switch.

The Manual of the "Newbridge" Gas Switch, issued by the Horstmann Gear Company, Ltd., of Bath, is a publication intended primarily for the use of fitters and salesmen, and it has recently been revised and brought up-to-date. The new edition now contains comprehensive lists of the various types of "Newbridge" switch, and copies have already been sent out to gas undertakings with most gratifying results in the number of requests for further copies for distribution to staffs.

A year of progress for West's carbonizing and fuel-handling systems . . .

During 1934 installations of Glover-West vertical retorts have been put into commission at Lurgan, Ireland (a second and a third installation), Worcester, Macclesfield (third contract), East Hull, Hawick, Scotland, Roskilde, Denmark (second contract), and Leicester (Belgrave Gate gasworks), and an installation of West-vertical carbonizing chambers is in operation at Tilburg, Holland.

New contracts for Glover-West vertical retort installations, with their nominal daily gas-making capacities, are as follows:—Bilston (1,080,000 c. ft.); Falkirk (second contract—720,000 c. ft.); Leicester (sixth contract—2,400,000 c. ft.); Leven, Scotland (second contract—240,000 c. ft.); Limerick (second contract—150,000 c. ft.); Llanelly (720,000 c. ft.); Manchester (Rochdale Road gasworks—2,880,000 c. ft.); Southend-on-Sea (Gas Light and Coke Company—4,000,000 c. ft.); St. Helens (fourth contract—3,240,000 c. ft.); Stratford-on-Avon (720,000 c. ft.); Johannesburg, S. Africa (second contract—1,350,000 c. ft.); Bourg-en-Bresse, France (480,000 c. ft.); Vannes, France (second contract—240,000 c. ft.); Roskilde, Denmark (second contract—150,000 c. ft.); Reus, Spain (375,000 c. ft.); and Santiago, Chile (third contract—1,920,000 c. ft.).

Installations of Westvertical carbonizing chambers are in hand for the gas undertakings of St. Albans (nearly four million c. ft. per day); Willenhall (600,000 c. ft. per day); and North Shore, Sydney, N.S.W. (nearly three million c. ft. per day).

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STOCK AND SHARE LIST.

Official Quotations on the London and Provincial Stock Exchanges.

Issue. £	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Jan. 11.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
1,551,868	Stk.	Sept. 10	7	7	Alliance & Dublin Ord. ...	135—145	...	137½
374,000	"	Dec. 17	4	4	Do. 4 p.c. Deb.	90—100	...	...
557,655	"	Aug. 13	7	7	Barnet Ord. 7 p.c. ...	168—178	...	...
300,000	1	Oct. 8	1/93	1/4½	Bombay, Ltd.	1⅛—1⅛	...	31/—31/6
178,480	Stk.	Aug. 13	9½	9½	Bournemouth sliding scale	227—237	...	...
550,050	"	"	7	7	Do. 7 p.c. max. ...	170—175	...	173
439,160	"	"	6	6	Do. 6 p.c. Pref. ...	150—155	...	...
50,000	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	86—91	...	...
262,025	"	"	4	4	Do. 4 p.c. Deb. ...	105—110	...	108
335,000	"	"	5	5	Do. 5 p.c. Deb. ...	128—133	+3	...
367,900	"	Aug. 13	7½	7½	Brighton, &c., 6 p.c. Con. ...	177—187	+2	184—186
540,000	"	"	6½	6½	Do. 5 p.c. Con. ...	158—163	...	161
195,500	"	"	6	6	Do. 6 p.c. B. Pref.	145—150	...	...
1,487,500	"	July 9	5	5	Bristol 5 p.c. max.	120—122a	...	...
120,420	"	Dec. 17	4	4	Do. 1st 4 p.c. Deb. ...	102—104a	...	...
217,870	"	"	4	4	Do. 2nd 4 p.c. Deb. ...	102—104a	...	...
338,790	"	"	5	5	Do. 5 p.c. Deb.	122—124a	...	...
865,000	"	Sept. 24	8	7	British Ord.	174—179	...	...
100,000	"	Dec. 17	7	7	Do. 7 p.c. Pref. ...	155—160	...	...
120,000	"	"	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...	...
450,000	"	"	5	5	Do. 5 p.c. Red. Deb. ...	111—116	+3	113
100,000	10	22 May '33	6	4	Cape Town, Ltd.	2—4	...	...
100,000	10	Nov. 6	4½	4½	Do. 4½ p.c. Pref. ...	4—6	...	...
150,000	Stk.	Dec. 17	4½	4½	Do. 4½ p.c. Deb. ...	90—95	...	...
626,850	"	July 23	6	6	Cardiff Con. Ord.	135—140	...	...
287,850	"	Dec 17	5	5	Do. 5 p.c. Red. Deb.	105—110	...	...
157,150	"	July 23	5	5	Chester 5 p.c. Ord. ...	115—118b	...	...
98,926	1	Sept. 24	2/-	2/-	Colombo, Ltd. Ord.	1¾—1⅞	...	...
24,500	1	"	1/4½	1/4½	Do. 7 p.c. Pref. ...	19/6—21/6	...	...
609,204	1	Sept. 24	/11'48	/11'48	Colonial Gas Assn. Ltd. Ord.	19/6—21/6	...	...
296,058	1	"	1/8'80	1/8'80	Do. 8 p.c. Pref.	24/6—26/6	...	26/3
1,775,005	Stk.	July 23	6	5	Commercial Ord.	122—127	...	125½
475,000	"	Dec. 3	3	3	Do. 3 p.c. Deb. ...	87—91	...	88½
286,344	"	Aug. 13	5	5	Do. 5 p.c. Deb. ...	125—130	...	...
807,560	"	Aug. 13	7	7	Croydon sliding scale ...	165—170	...	...
569,590	"	"	5	5	Do. max. div.	116—121	...	...
620,385	"	Dec. 17	5	5	Do. 5 p.c. Deb.... ...	125—128	...	...
642,270	"	Aug. 13	10	7	Derby Con.	200—210e	+5	...
55,000	"	Dec. 17	4	4	Do. 4 p.c. Deb.	100—105e	...	...
209,000	"	Aug. 13	5	5	East Hull Ord. 5 p.c. ...	113—118	...	115½—117
181,625	"	Aug. 13	6	6	East Surrey Ord. 5 p.c. ...	140—145	...	...
175,609	"	Dec. 17	5	5	Do. 5 p.c. Deb. ...	125—128	...	...
1,002,180	"	Sept. 10	†7	†5	European, Ltd.	120—125	...	120
19,313,431	"	Aug. 13	5⅞	5⅞	Gas Light & Coke 4 p.c. Ord.	27/9—28/9f	...	27/10½—28/8½
2,600,000	"	"	3½	3½	Do. 3½ p.c. max. ...	93—97	...	95½—96½
4,477,106	"	"	4	4	Do. 4 p.c. Con. Pref. ...	109—112	...	1'0—111½
6,102,497	"	Dec. 3	3	3	Do. 3 p.c. Con. Deb. ...	90 93	+1	91—92
2,643,770	"	"	5	5	Do. 5 p.c. Red. Deb. ...	118—121	...	120⅝
3,500,000	"	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	117—120	+1	117½—119½
270,466	"	Aug. 13	6	5	Harrogate New Cons. ...	140—145	...	...
140,000	1	Sept. 24	1/7½	1/7½	Hongkong & China, Ltd. ...	1⅜—1⅝	...	...
213,200	Stk.	Aug. 13	6	5	Hornsey Con. 3½ p.c. ...	137—142	...	...
5,600,000	"	Oct. 22	14	10	Imperial Continental Cap.	218—223	+2	219½—220½
220,180	"	July 23	3½	3½	Do. 3½ p.c. Red. Deb.	92—97	...	95
285,242	"	Aug. 13	8½	8½	Lea Bridge 5 p.c. Ord. ...	190—200	...	...
2,167,410	"	Aug. 13	8	6	Liverpool 5 p.c. Ord. ...	144½—145½b	...	...
245,500	"	Dec. 17	5	5	Do 5 p.c. Red. Pref. ...	105—110b	...	...
306,083	"	July 16	4	4	Do. 4 p.c. Deb. ...	104—107b	...	...
11,751	"	Aug. 27	10	8	Maidstone 5 p.c. Cap. ...	188—198	...	...
68,480	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	83—88	...	...
75,000	"	Dec. 3	†10	†10	Malta & Mediterranean	205—215	+5	215
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	100—103	...	103—103½
231,978	Stk.	Aug. 13	5	5	M. S. Utility "C." Cons. ...	115—120	...	...
818,657	"	"	4	4	Do. 4 p.c. Cons. Pref.	101—106	...	104½
360,075	"	Dec. 17	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
148,955	"	"	5	†5	Do. 5 p.c. Deb. ...	127—132	+2	...
125,000	—	Jan. 2	11/8	3½	Do 3½ p.c. Rd. Rg.Bds.	98—101	...	...
675,000	"	May 28	†6	†13	Montevideo, Ltd.	55—65	...	...
2,061,315	"	Aug. 13	6⅔	5	Newcastle & Gateshead Con.	26/6—27/-d/	...	...
682,856	"	"	4	4	Do. 4 p.c. Pref. ...	105—107d	...	...
776,706	"	Dec. 17	3½	3½	Do. 3½ p.c. Deb. ...	98½—100½d	...	...
277,285	"	Oct. 8	5	5	Do. 5 p.c. Deb. '48 ...	105—107d	...	...
274,000	"	Aug. 13	5	5	Newport (Mon.) 5 p.c. max.	110—112a	...	...
204,940	"	Aug. 13	7½	7½	North Middlesex 6 p.c. Con.	170—175	...	...
396,160	"	Aug. 13	5	5	Northampton 5 p.c. max. ...	107—112	...	...
300,000	"	Nov. 5	†7	†9	Oriental, Ltd.	168—173	...	170½—172
416,617	"	Dec. 17	8	8	Plym'th & Stonehouse 5 p.c.	180—185b	...	182—184½
504,416	"	Aug. 13	6	6	Portam'th Con. Stk. 4 p.c. Std	188—188	...	...
241,446	"	"	5	5	Do. 5 p.c. max. ...	112—117	...	...
114,000	"	July 23	5	5	Preston 5 p.c. Pref. ...	110—115	...	...
1,736,968	Stk.	Aug. 27	6	6	Sheffield Cons.	147—149e	...	...
95,000	"	July 9	4	4	Do. 4 p.c. Deb.	100—104e	...	...
133,201	"	Aug. 13	5	8½	Shrewsbury 5 p.c. Ord. ...	155—160	+1	159½
90,000	10	May 28	†4	†3	South African	3—4	...	...
927,177	1	Sep. 10	1/32	1/32	South-East'n Gas Cn. Ld. Ord.	30/6—32/6	...	...
786,061	1	"	-/10½	-/10½	Do. 4½ p c. Red.Cum.Pref.	22/6—23/6	...	...
450,000	Stk.	Aug. 13	74/4	4	Do. 4 p.c. Red. Deb. ...	102—105	...	...
6,709,895	"	Aug. 13	7	6	South Met. Ord.	148—151	+1	148½—151
1,135,812	"	"	6	6	Do. 6 p.c. Irred. Pf.	150—153	...	153
850,000	"	"	4	4	Do. 4 p.c. Irred. Pf.	107—110	...	109½
1,895,445	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	89—92*	...	92
1 000,000	"	Jan. 7	5	5	Do. 5 p.c. Red. Deb.	116—120*	−1	117½—120½
209,820	"	Aug. 13	8½	8½	South Shields Con.	186—188d	...	...
1,548,795	"	July 9	6	6	South Suburban Ord. 5 p.c.	144—149	...	...
512,325	"	"	5	5	Do. 5 p.c. Pref.	124—129	...	125—126½
300,000	"	"	4	4	Do. 4 p.c. Pref.	105—110	...	108
868,837	"	Dec. 17	5	5	Do. 5 p.c. Deb.	128—133	+3	...
100,000	"	"	4	4	Do. 4 p.c. Deb.	107—112	...	...
647,740	"	Aug. 13	5	5	Southampt'n Ord. 5 p.c. max.	118—123	...	...
121,275	"	Dec. 17	4	4	Do. 4 p.c. Deb.	102—107	...	...
550,000	"	Aug. 13	5½	5½	Swansea 5½ p.c. Red. Pref.	114—119	...	118½—118½
200,000	"	Dec. 17	6½	6½	Do. 6½ p.c. Red. Deb.	100—105	...	...
1,076,490	"	Aug. 13	6⅔	6⅔	Tottenham and District Ord.	163—168	...	165—167
409,835	"	"	5½	5½	Do. 5½ p.c. Pref. ...	133—138	...	137—137½
62,235	"	"	5	5	Do. 5 p.c. Pref. ...	122—127	...	...
199,005	"	Dec. 3	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
349,110	"	Aug. 13	7	7	Uxbridge, &c., 5 p.c. ...	165—170	...	169
88,330	"	"	5	5	Do. 5 p.c. Pref. ...	124—129	...	...
1,326,700	"	Aug. 13	7	7	Wandsworth Consolidated	168—173	...	170½
1,371,373	"	"	5	5	Do. 5 p.c. Pref.	127—132	+1	130½
1,317,964	"	Dec. 17	5	5	Do. 5 p.c. Deb.	130—135	...	134½—134½
208,300	"	"	...	26/8	Do. 4 p.c. Deb.	104—109	...	...
158,400	"	Aug. 13	6a	5	Winchester W. & G. 5 p.c. Con.	120—125	...	124½

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g.*—Paid £8, including 10s. on account of back dividends. * Ex. div. † Paid free of income-tax. ‡ For year.

COMPANY NOTICES.

SOUTH METROPOLITAN GAS COMPANY.

NOTICE is Hereby Given that the ORDINARY GENERAL MEETING of the Proprietors of this Company will be held at Southern House, Cannon Street, E.C. 4, in the City of London, on Wednesday, the 6th day of February next, at Twelve o'clock noon precisely, to receive the Directors' Report and the Accounts of the Company for the Year ended the 31st of December last; to declare Dividends for the same period; and to elect two Directors and one Auditor in place of those retiring by rotation.

NOTICE IS HEREBY ALSO GIVEN that, in accordance with the Standing Orders of Parliament, an Extraordinary General Meeting of the Proprietors will be held at the same place on the said 6th day of February, 1935, at 12.30 o'clock in the afternoon, or so soon thereafter as the business of the Ordinary General Meeting shall have been concluded, for the purpose of considering, and, if thought fit, of approving, the Bill proposed to be introduced into Parliament in the present Session, and entitled:

"A Bill to extend the limits of supply of the South Metropolitan Gas Company; and for other purposes."

The TRANSFER BOOKS WILL BE CLOSED for both PREFERENCE and ORDINARY STOCKS on and from the 23rd day of January next until after the Meeting.

By order,
F. G. BREWER,
Secretary.

Offices:
709, Old Kent Road,
London, S.E. 15,
Jan. 12, 1935.

COMMERCIAL GAS COMPANY.

NOTICE is Hereby Given that an ORDINARY MEETING of the Commercial Gas Company will be holden at the Abercorn Rooms, Liverpool Street Station, in the City of London, on Thursday, the 21st of February, 1935, at Twelve o'clock noon:

To receive the Directors' Report and the Accounts of the Company for the Year ended 31st December, 1934;

To declare a Final Dividend for the Year ended 31st December, 1934;

To elect Directors and an Auditor in the place of those retiring;

To authorize the raising of additional capital.

The STOCK TRANSFER BOOKS WILL BE CLOSED from the 22nd of January to the 21st of February next, both days inclusive; and the Dividends will be paid on the 22nd February next to the Holders of Stock registered at the date of the closing.

By order of the Board,
F. J. BRADFIELD,
General Manager and Secretary.

Offices,
Stepney,
Jan. 14, 1935.

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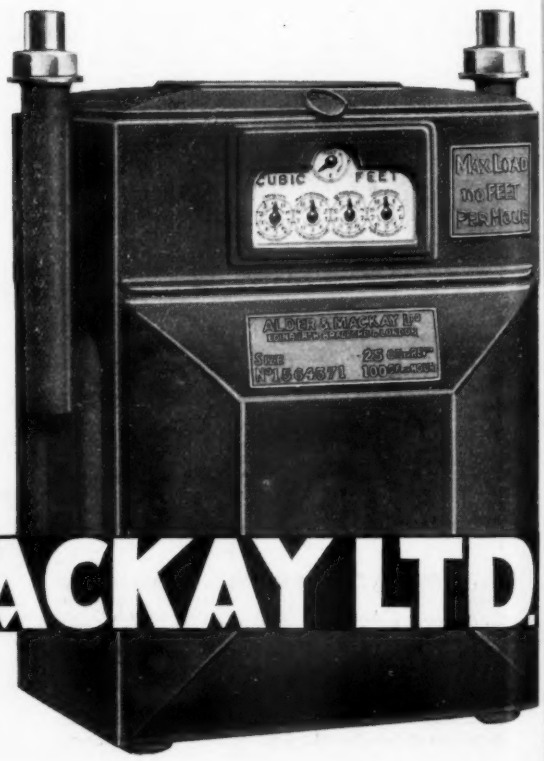

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